

**£39 per month**  
inc. maint.

LA34

**MBS Rentals**  
Tel: 09323-53151

## NEWS IN BRIEF

## Eurodatabase market growth

THE international market research firm Input has predicted that the European market for on-line databases could approach that of the US by 1985 at an estimated \$4.3 billion. Input believes that Videotext, videotape, Burotext, PTT packet switched networks and other information industry projects with government backing will boost the database market from its present \$150 million into a prime market.

## GaAs saving

A TECHNIQUE that greatly reduces the cost of gallium arsenide has been developed by scientists at the Massachusetts Institute of Technology. Called Clef, the approach uses a substrate of GaAs bonded to glass and thus reduces the amount of GaAs required.

## PDP-11 add-in

DIGITAL Equipment users could be interested in what is said to be the first single board 256K-byte add-in memory for the PDP-11/44. Called the DR-1448 it is manufactured in the US by Datacube Corp. of Cranbury, New Jersey, which says that it is completely compatible with DEC's MS11-A memory module for the 11/44.

## Training aid sought

APPLICATIONS to the EEC for funding microtechnology training schemes have been made by the counties of Hereford and Worcester. Common market officials in Brussels are considering a request for £1,400,000 which would be used to train unemployed under-25s in microelectronics.

## Computer security

AS part of security precautions after recent bomb blasts, Warwickshire police are to move communications and computer equipment into parts of police stations which are most difficult for intruders to reach.

## Japanese market

THE semiconductor manufacturing equipment market in Japan is now half taken up by Japanese producers. Five years ago the US had 75 per cent of the market in Japan. It still has 75 per cent of the total world market, which is growing at between 20 per cent and 40 per cent a year.

## Heart transplant

FORMER systems analyst William Thomas is making a good recovery, said a hospital spokesman after a 1-hour heart transplant operation at Papworth Hospital, Cambridge. The 40-year-old former systems analyst at British Telecom worked for the hospital's computer centre until his heart failed last month.

## Telecom HQ

THE new Coventry area headquarters for British Telecom is the 12,000 sq ft, four-building house, which has been standing empty for 12 years. Over 1,000 people are expected to move there by 1984, after its communications system and shopfront have been installed.

## Buyer for ICL's Winsford plant

THE disposal of ICL's factory at Winsford, Cheshire, has been announced just as the company's severance pay terms have been accepted by the unions representing the 1,450 redundant Winsford workers.

Taking over the plant is United Peripherals, the joint disc drive manufacturing operation set up in 1979 by Data Recording Instruments and Control Data subsidiary Magnetic Peripherals Inc. The deal does not include an undertaking by UPL to employ any of the ICL staff, although jobs should be available for some of them later this year.

The takeover of the Winsford factory will save both time and money for UPL, which originally planned to build a 150,000 square foot plant at Crewe near its existing temporary premises where 450 staff are employed at the moment.

If these wish to stay with UPL they will have to travel to Winsford, which is eight miles from Crewe and where re-equipping by UPL will follow ICL's vacation of the site in July.

By the end of 1981, the UPL workforce at Winsford is expected to stand at 800, including some staff transferred from the other UPL manufacturing operation at Staines which is being run down as part of the company's rationalisation plans.

Most of the 380 Staines workforce is expected to accept redundancy rather than move to Winsford, so the disc drive manufacturer is likely to have jobs available for a lot of former ICL employees.

The activities of DRI outside UPL, such as its printer manufacturing operation, will remain at Staines.

MPI is 70% owned by Control Data and embraces most of the big computer manufacturer's disc drive research and manufacturing

activities. MPI owns only 24% of UPL, the rest being held by National Enterprise Board-owned DRI, but it exerts a dominant influence over its management, mainly because of its substantial R & D resources in the US.

The first two UPL products are both MPI-developed units that the company already builds at its plant in Oklahoma City. They are the 9427H cartridge disc drive which comes with one fixed and one removable platter, each holding six megabytes, and the 9448 cartridge module drive which combines a 16 megabyte front loading cartridge with 16, 48 or 80 megabytes of fixed disc capacity.

Funded by the NEB to the tune of £8 million, UPL builds drives for sale on a world-wide basis both by DRI and the OEM side of Control Data. The transfer value of its products in 1980 was £17 million, according to Control Data, and a figure of £28 million is planned for 1981.

Also, if after the British Telecommunications Bill is passed the Industry Secretary uses the power it gives him to de-nationalise Cable & Wireless, GEC-Marconi regards itself as the most appropriate purchaser.

## Government computing likely to be disrupted

DISRUPTION of government computer operations by civil servants seeking an improved pay award for all civil service unions is increasingly likely, following an agreement by the nine unions to press for a 15% increase. This will probably be 15%, instead of the 6% the government is threatening.

According to Clive Bush, general secretary of the clerical union CPSA, there is a "mood of anger" among members now, and the size of the attendance at recent rallies, Bush says, "frankly surprised us".

Tactics have not yet been decided but they are likely to comprise selective strikes involving the fewest possible people, giving the maximum impact. This points particularly to areas of revenue collection such as computers in use for VAT, phone bills, customs and excise and car tax.

Bush points out that similar action in 1979 cost the government £500 million in lost revenue. He adds that systems involving payments out to the public such as social security would not be affected.

Consultations are now going on with members on the feasibility of different courses of action and repercussions they would have. A final decision will be made in February.

Central to the dispute is the decision by the government not to follow the recommendations of the Pay Research Unit, which compares civil service pay with that in industry. Commenting on this Tony Christopher, general secretary of the Inland Revenue Staff Federation, said, "There should be no doubt in anyone's mind that government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

Christopher... "Government has deliberately caused this conflict."

## GEC plans satellite comms service

GEC says it wants to run a worldwide multi-function satellite communications service, combining direct broadcasting with computer and telephone links and having spare capacity for military communications.

Sir Robert Telford, managing director of GEC-Marconi Electronics, reveals his aims in an interview in the project management magazine Achievement, at a time when a Home Office working party is about to report on the options for and implications of a UK-operated satellite, and Professor Beasley of the London Business School is to report to Industry Secretary Sir Keith Joseph on the likely effects of privately owned communications services operating in competition with British Telecom.

GEC has wide experience of supplying systems for satellite communications to Cable & Wireless for networks in Hong Kong, Bahrain and the West Indies, as well as to British Telecom, and it would like to use the experience to operate a system itself.

Also, if after the British Telecommunications Bill is passed the Industry Secretary uses the power it gives him to de-nationalise Cable & Wireless, GEC-Marconi regards itself as the most appropriate purchaser.

Also, if after the British Telecommunications Bill is passed the Industry Secretary uses the power it gives him to de-nationalise Cable & Wireless, GEC-Marconi regards itself as the most appropriate purchaser.

Also, if after the British Telecommunications Bill is passed the Industry Secretary uses the power it gives him to de-nationalise Cable & Wireless, GEC-Marconi regards itself as the most appropriate purchaser.

Also, if after the British Telecommunications Bill is passed the Industry Secretary uses the power it gives him to de-nationalise Cable & Wireless, GEC-Marconi regards itself as the most appropriate purchaser.

Also, if after the British Telecommunications Bill is passed the Industry Secretary uses the power it gives him to de-nationalise Cable & Wireless, GEC-Marconi regards itself as the most appropriate purchaser.

Also, if after the British Telecommunications Bill is passed the Industry Secretary uses the power it gives him to de-nationalise Cable & Wireless, GEC-Marconi regards itself as the most appropriate purchaser.

Also, if after the British Telecommunications Bill is passed the Industry Secretary uses the power it gives him to de-nationalise Cable & Wireless, GEC-Marconi regards itself as the most appropriate purchaser.

Also, if after the British Telecommunications Bill is passed the Industry Secretary uses the power it gives him to de-nationalise Cable & Wireless, GEC-Marconi regards itself as the most appropriate purchaser.

Also, if after the British Telecommunications Bill is passed the Industry Secretary uses the power it gives him to de-nationalise Cable & Wireless, GEC-Marconi regards itself as the most appropriate purchaser.

Also, if after the British Telecommunications Bill is passed the Industry Secretary uses the power it gives him to de-nationalise Cable & Wireless, GEC-Marconi regards itself as the most appropriate purchaser.

Also, if after the British Telecommunications Bill is passed the Industry Secretary uses the power it gives him to de-nationalise Cable & Wireless, GEC-Marconi regards itself as the most appropriate purchaser.

Also, if after the British Telecommunications Bill is passed the Industry Secretary uses the power it gives him to de-nationalise Cable & Wireless, GEC-Marconi regards itself as the most appropriate purchaser.

## Net/One first UK customer

BRITISH Telecom is the first UK customer for Net/One, the low networking system announced last year by California-based Ungerma-Bass (CW, October 1980).

BT's order is for a £17m three-node pilot system with serial ports, and it is due to be delivered in the first week in February by Ungerma-Bass, newly-appointed UK distributor Thame Systems, formerly Net Systems, of Thame in Oxfordshire.

BT is to use the system in linking multiple micros and minis and later plans to add mainframes. Thame Systems was chosen a distributor because it had already become top UK distributor for the micro maker Zilog before Ungerma-Bass and Charlie Bass joined their networking system company.

Thame now reports eight more orders in the pipeline and another 20 serious UK inquiries for Net/One, which is claimed to be the first processor-independent low networking product in volume production.

Delivery is estimated at between 30 and 60 days.

Delivery is estimated at between 30 and 60 days.

Delivery is estimated at between 30 and 60 days.

Delivery is estimated at between 30 and 60 days.

Delivery is estimated at between 30 and 60 days.

Delivery is estimated at between 30 and 60 days.

Delivery is estimated at between 30 and 60 days.

Delivery is estimated at between 30 and 60 days.

Delivery is estimated at between 30 and 60 days.

Delivery is estimated at between 30 and 60 days.

**Wilkes Computing**  
For  
**DEC SYSTEMS**  
VAX 11/780  
PDP 11/70, 11/34's,  
11/44's  
PDP 11/03, 11/23's  
systems and  
software  
VT 100 LA 120  
EA 34  
Home and  
Export Sales  
© Digital Equipment Company Ltd.  
Tel (0272) 25921 Telex 449205

**£39 per month**  
inc. maint.

LA34

**MBS Rentals**  
Tel: 09323-53151

## CAP chief quits to back Microsoft

by Claire Gooding  
A "DEMERGER" at giant British software firm CAP has separated its micro arm CAP Microsoft from the parent company, leaving the new subsidiary to stand on its own feet under the leadership of CAP's founder Alex d'Agapeyeff. CAP's other founder member, Barney Gibbens, is to take over d'Agapeyeff's chairmanship, although each will remain a director of the other's company.

What d'Agapeyeff describes as a "very logical development" will almost certainly come as a great relief to many members of the parent company, who have watched with increasing alarm CAP's profits being swallowed by Microsoft's development budget.

CAP is quite open about the conflict of interests between Microproducts (as the new company will probably be called) and its traditional market. "Some users

are not keen on accepting both consultancy and their entire range of systems software from the same source," explained d'Agapeyeff.

Despite this uneasy relationship, the board presented a united face at Friday's announcement. Far from d'Agapeyeff being "pushed out", it was made clear this was a satisfactory arrangement which hinged more on a reorganisation of finances than any real change in the running of the companies.

CAP is effectively writing off its investment in MicroCobol, although the group will continue to support the language.

The enterprise d'Agapeyeff is launching has already cost over £2.5 million, and has consistently dragged down CAP's profits.

The main effect of the shake-up will be felt by the companies' shareholders. CAP's senior employees hold 55% of the shares,

with Charterhouse and the National Enterprise Board having 15% and 30% respectively.

The new company will be owned by the existing shareholders in the same ratio. CAP is likely to keep about 1,000 of its present 7,500 shares and distribute the rest. Microproducts Ltd will issue additional shares in cash, leaving the NEB with a stake in the region of 11%. According to new chairman Barney Gibbens, this is the first time a demerger has been attempted under the 1980 Finance Act: the redistribution of shares has yet to be approved formally by the shareholders. A number of CAP's leading lights, including Edmund Hart and Chris Hawkins, will be throwing their lot in with the new company.

D'Agapeyeff has resigned control of CAP without regret, to

Turn to page 3

## Itel totters into bankruptcy

US LEASING giant Itel Corp filed for bankruptcy in San Francisco at 9 am on Monday. The action followed a series of meetings between customers, creditors and the board of the company which began last Thursday.

As late as 3 pm on Friday customers of the company were still signing firm term extension agreements with Itel and representatives of Lloyd's of London.

But the board decided that in the face of a \$24 million trading loss for the last nine months and a balance sheet that showed the company to be worth minus \$250 million, it could not continue trading.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade them in and upgrade, has still not settled with Itel. Over \$200 million of the company's assets are held by the company.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade them in and upgrade, has still not settled with Itel. Over \$200 million of the company's assets are held by the company.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade them in and upgrade, has still not settled with Itel. Over \$200 million of the company's assets are held by the company.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade them in and upgrade, has still not settled with Itel. Over \$200 million of the company's assets are held by the company.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade them in and upgrade, has still not settled with Itel. Over \$200 million of the company's assets are held by the company.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade them in and upgrade, has still not settled with Itel. Over \$200 million of the company's assets are held by the company.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade them in and upgrade, has still not settled with Itel. Over \$200 million of the company's assets are held by the company.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade them in and upgrade, has still not settled with Itel. Over \$200 million of the company's assets are held by the company.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade them in and upgrade, has still not settled with Itel. Over \$200 million of the company's assets are held by the company.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade them in and upgrade, has still not settled with Itel. Over \$200 million of the company's assets are held by the company.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade them in and upgrade, has still not settled with Itel. Over \$200 million of the company's assets are held by the company.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade them in and upgrade, has still not settled with Itel. Over \$200 million of the company's assets are held by the company.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade them in and upgrade, has still not settled with Itel. Over \$200 million of the company's assets are held by the company.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade them in and upgrade, has still not settled with Itel. Over \$200 million of the company's assets are held by the company.

Without any formal announcement, lawyers for the company

went to a local district court as soon as it opened on Monday and submitted the formal Chapter XI proposals for winding it up. This allows Itel to continue trading in a similar way to receivership in the UK.

The saga of Itel's demise, which began with the announcement of IBM's 4300 series two years ago and the subsequent collapse of the secondhand value of the 370 series on which Itel arranged flexible leases, is far from over.

Lloyd's of London, which insured the secondhand values of the lease machines should customers decide to trade



## COMPUTER WEEKLY

Vol. 30 No. 741  
Thursday, January 22, 1981Editor  
Simon Timm 01-661 3122Deputy Editor  
Brendan Gamster 01-661 3124Advertisement Manager  
Harry Hutson 01-661 3101  
01-661 3102Class Ad Manager  
Brian Durrant 01-661 3106Publishing Director  
Dr J. A. B. ThomasEditorial Director  
Chris HipwellPC Electrical Electronics Press Ltd.  
Quadrant House, The Quadrant,  
Bournemouth, Dorset BH2 6BA.  
Telephone: 01204 616765 GBranch Offices:  
Birmingham: Lynton House,  
202 Westside Road, Birmingham B42 1BA.  
Telephone: 0121 359 4338Manchester: Grove House,  
Barrow Road, Old Trafford,  
Manchester M16 0PE.  
Telephone: 0161 872 0801New York: 205 East 42nd Street,  
New York NY 10017.  
Tel: (0101-212) 597 2880.Published weekly on Thursday.  
Registered at the Post Office as a  
newspaper. Price per copy 25p.

© PC Business Press Ltd 1981.

**EDITORIAL**  
The following editorial staff can be contacted on 01-661 3600, with the extensions shown:

Keith Jones	3635
Rory Johnston	3634
Kevlin Cahill	3639
Clair Gooding	3641
Ellen Stainer	3640
Paul Fisher	3638
Donald Kennett	3636
Mike Marples	3646
Nancy Poocek	3645
John Burt	3643
Julie Otterill	3644

**ADVERTISING - Display**  
The following staff can be contacted on 01-661 3600, with the extensions shown:

Ken Carter	3604
Xenia White	3672
Steve Bass	3670
David Hogan	3670

Manchester  
Harry Aikin 061-972 8861

Birmingham  
Ken Parrott 021-366 4938

**ADVERTISING - Classified**  
The following staff can be contacted on 01-661 0121:

Chris Prior	0121
Ken Welford	0121
Jan Fox	0121
Nell McDowell	0121
Danica Smith	0121
Julie Hannaford	0121
Kevin McOwen	0121
Cliffan Johnson	0121

Manchester  
Owen Kelly 061-972 8861

Birmingham  
Vic Sheret 021-366 4938

**ADVERTISING - Production**  
The following staff can be contacted on 01-661 3600, with the extensions shown:

Steve Lever	3104
Peter Rigby	3676

Computer Weekly is a national computer magazine published weekly, except for two issues which are published bi-monthly in the summer months of June and July.

Computer Weekly is a national computer magazine published weekly, except for two issues which are published bi-monthly in the summer months of June and July.

Computer Weekly is a national computer magazine published weekly, except for two issues which are published bi-monthly in the summer months of June and July.

Computer Weekly is a national computer magazine published weekly, except for two issues which are published bi-monthly in the summer months of June and July.

## COMPUTERVIEW

## Japanese U-turn

WITH the announcement that yet another Japanese company is to launch its personal/business computer on the UK and European market, it seems the Japanese are keeping to their proven rule - persistence pays in the end. Despite opposition from national governments, Japanese exports of personal computers into EEC countries have risen from almost zero to 1,000 units a month in the last year.

Now, after constant denials that the PC-8000 would be introduced to the European market, Nippon Electric has done a U-turn and plans to launch a personal computer system based on the PC-8000 in the UK and Europe at the end of this year.

The PC-8000 was revealed to visitors to last year's Compec. Over 300 inquiries came from dealers, distributors and visitors, according to NEC, and this is the factor that persuaded the company to alter its plans.

Already, three other relatively small Japanese companies have become exporters to Europe in the personal computer field. They are Sord Computer Systems, AI Electronics and Logic Systems International, all based in Tokyo. Intentions of all three are to become exporters to the US early this year, initially in small quantities. However, they expect sales to increase rapidly as they have done in Europe.

One factor that must be causing a great deal of anguish to Japanese manufacturers is

import restrictions. The quality and reliability of Japanese products make them very competitive, and the inevitable reaction of European countries is to impose restrictions, as France is threatening to do. France has already warned the Japanese government (mentioning Sord Computer Systems in particular) to restrain its exports.

But the Japanese persist. One good way of overcoming import restrictions is to set up an assembly plant in an EEC country, and Sord has done just that.

Assembly of its microcomputer systems has begun at a small factory in Dublin. The units are shipped in the UK through two distributors, Exleigh Business Machines of Penzance and Midas Computers. According to Sord most of the assembled units from Dublin go into France, to two major customers, the French Ministry of Defence and the French National Bank. (No wonder France wants to impose restrictions!)

Which other Japanese companies will follow Sord? NEC could easily, as it already plans a UK semiconductor plant. Only four months ago it was announced that NEC was planning a 64K RAM and 16-bit microcomputer plant at a site in Livingston, near Edinburgh. It will operate under the name of NEC Semiconductor UK and be fully operational by 1982.

Even more ironic is that Livingston is a "special development area" and NEC will receive financial assistance from our government. In a way the UK, far from strengthening its indigenous personal computer manufacturing industry, is financially assisting a Japanese company to take a part share in the market.

## Viewdata move

A WELL OVERDUE move for members of the emerging viewdata and teletext industries to work together got under way last week at a conference organised by the Department of Industry.

The next stage is to get those members, whose previous marketing efforts were described by Information Technology Minister Kenneth Baker as being unco-ordinated, to agree on a common strategy, despite the fact that many of them are rivals.

Last year the DoI brought the teletext industry together in an awareness campaign which started with 15% of adult consumers knowing about teletext and reputedly finished with 50% knowing. At the same time, sales of teletext sets reached 120,000.

This year the field has been broadened to include viewdata, which has already had a big push from British Telecom and is beginning to enjoy success in small specialised markets, as well as continuing sales overseas.

With any luck the field will quickly be broadened further to bring together other aspects of information technology. Perhaps cable television and two-way radio will be seen to be related - after all, they are an important part of the US market and a major target for UK-based viewdata and teletext industries.

And since the export success of these industries is expected to benefit the development of the home market, perhaps it will be possible to persuade British Telecom to allow Prestel terminals to access each other symmetrically at a variety of speeds, call each other and answer automatically, attach to computers and other devices and link to radiophones and other multi-function terminals.

The Telecommunications Council is going to create a forum for interests such as computer, mobile radio and telecommunications companies and their users may still succeed.

Other focal points for hopeful technology are: The DoI's information technology and its enthusiastic new IBM British Telecom's telematics division, Home Office's working party on security and Professor Beesley's report to the Secretary, due shortly, on the liberalisation of British Telecom's monopoly.

But when will these combined efforts be able to bring us Space Invaders on view? Will the viewdata industry see any real work on Open Systems Interconnection; the ability to connect anything to anything? And can the focus of attention move on from the rich pickings of terminal equipment market to the main market for services to which cheap multiple terminals can provide widespread access?

## LETTERS to the EDITOR

## Separating information from raw data

I SEE from the articles by Messrs Michie and Sutcliffe (CW, January 8) that there is still no shortage of gentlemen to discuss earnestly problems of the "number-of-angels-that-can-dance-on-the-head-of-a-needle" type.

As a new reader, I have not had the pleasure of seeing Professor Michie's definition of "information" but from their discussions it would appear that they are using "information" in its technical sense.

While this is fine for Shannon's Information Theory and for work involving thermodynamics, it is not so useful for managers concerned with everyday decision-making.

In its managerial sense, "information" is what we need to make decisions.

With no information we are guessing, with incomplete information (the most common state of affairs) we hope to do better than guessing and perfect information hardly ever arises in real management situations.

In these circumstances, a better definition of information is given by Beer as "That which changes us" i.e. causes us to behave/decide differently from how we would have behaved/decided without that specific input.

The key is that information is managerially useful.

How does information in the managerial sense relate to information in the Michie/Sutcliffe/Shannon sense?

The manager's everyday environment, which is a part of Professor Michie's open system, is a sea of technical/thermodynamic-type "information". This may be considered to be "latent data" in managerial terms.

As a matter of routine, request or chance, someone does cut into the environment and collects some of this latent data. It then becomes "raw data".

Someone may recognise and extract meaning out of the raw

data and it becomes information in the managerial sense.

One factor that must be causing a great deal of anguish to Japanese manufacturers is

## TEN YEARS AGO

From Computer Weekly of January 21, 1971

A REVEALING picture of how Whitehall and Westminster employ computers and envisage their future emerges from the long-awaited Civil Service Department report, Computers in Central Government Ten Years Ahead, which shows the Ministry of Defence heading the list of present users. Looking to the future, the report foresees cumulative hardware investment of £200 million by 1980 with government computer power being 20-fold over the period.

British Rail Scotland has another £300,000 MARCH train description system. AEG-General Signal Ltd has gone Central to complement earlier installation at Motherwell.

Some 85% of computers do not provide specific help for software purchase, a fact contained in a recent Nippon Computer Centre survey.

Other topics will cover areas such as IBM's directions in telecommunications and office technology and its strategies for operating systems and databases.

Discussion of the 3081 will consider if the machine will be made obsolete in two or three years' time by new H-series computers capable of supporting future versions of systems software like MVS, VM, VSAM and IMS.

To be staged at the Cumberland Hotel in London, the conference will be the latest in the Yankee Group's European Technology Update series. It will be led by two well-known IBM watchers, the Yankee Group's own director of market research, Dale Kutnick, and Dr Dixon Doll who is retained by IBM as a training consultant despite his public pronouncements and predictions about IBM's strategies.

Further information about the event can be obtained from either Al Dunn or Gwendolyn Thompson, CTS - The Yankee Group, Regal House, Lower Road, Chorleywood, Rickmansworth, Herts, WD3 5LQ. Tel: Chorleywood (09278) 4714.

Other topics will cover areas such as IBM's directions in telecommunications and office technology and its strategies for operating systems and databases.

Discussion of the 3081 will consider if the machine will be made obsolete in two or three years' time by new H-series computers capable of supporting future versions of systems software like MVS, VM, VSAM and IMS.

To be staged at the Cumberland Hotel in London, the conference will be the latest in the Yankee Group's European Technology Update series. It will be led by two well-known IBM watchers, the Yankee Group's own director of market research, Dale Kutnick, and Dr Dixon Doll who is retained by IBM as a training consultant despite his public pronouncements and predictions about IBM's strategies.

Further information about the event can be obtained from either Al Dunn or Gwendolyn Thompson, CTS - The Yankee Group, Regal House, Lower Road, Chorleywood, Rickmansworth, Herts, WD3 5LQ. Tel: Chorleywood (09278) 4714.

Other topics will cover areas such as IBM's directions in telecommunications and office technology and its strategies for operating systems and databases.

Discussion of the 3081 will consider if the machine will be made obsolete in two or three years' time by new H-series computers capable of supporting future versions of systems software like MVS, VM, VSAM and IMS.

To be staged at the Cumberland Hotel in London, the conference will be the latest in the Yankee Group's European Technology Update series. It will be led by two well-known IBM watchers, the Yankee Group's own director of market research, Dale Kutnick, and Dr Dixon Doll who is retained by IBM as a training consultant despite his public pronouncements and predictions about IBM's strategies.

Further information about the event can be obtained from either Al Dunn or Gwendolyn Thompson, CTS - The Yankee Group, Regal House, Lower Road, Chorleywood, Rickmansworth, Herts, WD3 5LQ. Tel: Chorleywood (09278) 4714.

Other topics will cover areas such as IBM's directions in telecommunications and office technology and its strategies for operating systems and databases.

Discussion of the 3081 will consider if the machine will be made obsolete in two or three years' time by new H-series computers capable of supporting future versions of systems software like MVS, VM, VSAM and IMS.



An online terminal in a branch of the Trustee Savings Bank.

## Towards bank automation

BIFU, the banking and insurance trade union, has produced a booklet describing microelectronics in the bank in an effort to encourage banks in the UK to become fully automated.

Entitled Microtechnology: A Programme for Action, the document includes a model agreement on new technology, model guidelines for the operation of VDUs and a new technology assessment form.

It emphasises the need for proper implementation of new technology to avoid further economic depression and unemployment.

By 1990 there will be a 5% reduction in the number of bank branches and a 10% reduction in bank staff throughout Europe, BIFU says.

It has been predicted before, says BIFU, that the number of front office workstations in bank branches in Europe will more than double during the next five years. Some 22% of customer contact positions in European banks are now automated, and this number is expected to rise by 44% by 1985 and over 60% by 1990.

## Analysis of the first member of H-series

AN analysis of the IBM 3081, generally accepted as the first member of the long-awaited H-series, will be included in a two-day conference in London on February 16/17 organised by the Yankee Group.

With the title, Evolving the IBM Network, the event will also feature a talk about new aspects of IBM's Systems Network Architecture.

Other topics will cover areas such as IBM's directions in telecommunications and office technology and its strategies for operating systems and databases.

Discussion of the 3081 will consider if the machine will be made obsolete in two or three years' time by new H-series computers capable of supporting future versions of systems software like MVS, VM, VSAM and IMS.

To be staged at the Cumberland Hotel in London, the conference will be the latest in the Yankee Group's European Technology Update series. It will be led by two well-known IBM watchers, the Yankee Group's own director of market research, Dale Kutnick, and Dr Dixon Doll who is retained by IBM as a training consultant despite his public pronouncements and predictions about IBM's strategies.

Further information about the event can be obtained from either Al Dunn or Gwendolyn Thompson, CTS - The Yankee Group, Regal House, Lower Road, Chorleywood, Rickmansworth, Herts, WD3 5LQ. Tel: Chorleywood (09278) 4714.

Other topics will cover areas such as IBM's directions in telecommunications and office technology and its strategies for operating systems and databases.

Discussion of the 3081 will consider if the machine will be made obsolete in two or three years' time by new H-series computers capable of supporting future versions of systems software like MVS, VM, VSAM and IMS.

To be staged at the Cumberland Hotel in London, the conference will be the latest in the Yankee Group's European Technology Update series. It will be led by two well-known IBM watchers, the Yankee Group's own director of market research, Dale Kutnick, and Dr Dixon Doll who is retained by IBM as a training consultant despite his public pronouncements and predictions about IBM's strategies.

Further information about the event can be obtained from either Al Dunn or Gwendolyn Thompson, CTS - The Yankee Group, Regal House, Lower Road, Chorleywood, Rickmansworth, Herts, WD3 5LQ. Tel: Chorleywood (09278) 4714.

Other topics will cover areas such as IBM's directions in telecommunications and office technology and its strategies for operating systems and databases.

Discussion of the 3081 will consider if the machine will be made obsolete in two or three years' time by new H-series computers capable of supporting future versions of systems software like MVS, VM, VSAM and IMS.

To be staged at the Cumberland Hotel in London, the conference will be the latest in the Yankee Group's European Technology Update series. It will be led by two well-known IBM watchers, the Yankee Group's own director of market research, Dale Kutnick, and Dr Dixon Doll who is retained by IBM as a training consultant despite his public pronouncements and predictions about IBM's strategies.

Further information about the event can be obtained from either Al Dunn or Gwendolyn Thompson, CTS - The Yankee Group, Regal House, Lower Road, Chorleywood, Rickmansworth, Herts, WD3 5LQ. Tel: Chorleywood (09278) 4714.

Other topics will cover areas such as IBM's directions in telecommunications and office technology and its strategies for operating systems and databases.

Discussion of the 3081 will consider if the machine will be made obsolete in two or three years' time by new H-series computers capable of supporting future versions of systems software like MVS, VM, VSAM and IMS.

To be staged at the Cumberland Hotel in London, the conference will be the latest in the Yankee Group's European Technology Update series. It will be led by two well-known IBM watchers, the Yankee Group's own director of market research, Dale Kutnick, and Dr Dixon Doll who is retained by IBM as a training consultant despite his public pronouncements and predictions about IBM's strategies.

Further information about the event can be obtained from either Al Dunn or Gwendolyn Thompson, CTS - The Yankee Group, Regal House, Lower Road, Chorleywood, Rickmansworth, Herts, WD3 5LQ. Tel: Chorleywood (09278) 4714.

## Shipowner replaces BOC as backer of ICL-based bureau

AS backer for the ICL based bureau Systemsolve, BOC has been replaced by Hunting Gibson, a £12 million publicly quoted company in the shipping and broking business.

Hunting Gibson has bought BOC's 40% holding in Systemsolve and has taken a 50.1% controlling interest by acquiring some other Systemsolve shares. Total value of the deal was just over £1 million.

Hunting Gibson has no previous experience of the computer industry and its company secretary, John Smith, said that all decisions would be left in the hands of its existing bosses. But Smith will sit on the Systemsolve board.

Systemsolve managing director John Stanley said that BOC was no longer making new financial investments in his company and that it was apparent BOC had no place for Systemsolve in its medium to long-term strategy.

This view was supported by remarks from Colin Southgate, chief executive of BOC Data Services,

who said that BOC was not interested in Systemsolve's activities as a hatch bureau and was not happy about holding only a minority interest in the company. He said that BOC had made "a substantial capital gain" from the sale of its shares to Hunting Gibson.

Last year the BOC Data Service bureau disposed of its own ICL 2972-based service to concentrate on IBM-oriented operations.

Systemsolve's bureau, located near the BOC Data Service centre at Sunbury-on-Thames, operates two ICL machines, a 2903 and a 2905. Turnkey systems provide a high proportion of the company's revenues, with ME29 work becoming increasingly important.

Software packages for ICL machines are another major area of activity.

Systemsolve's turnover is expected to grow from £2.45 million in its financial year ended September 30, 1980, to £3 million in the current year.

Hunting Gibson chalked up a pre-tax profit of £1.5 million on a

£6 million turnover in the first six months of 1980 compared with £2.9 million on £12.4 million in 1979.

Hunting Gibson is one of three separate publicly quoted Hunting companies with engineering interests and historical connections.

BOC's interests in the computer services business are among the biggest in Europe. Apart from BOC Data Service it owns Software Sciences and the personnel company Knight Computer Services.

## Electron beams supplant heat

A BRITISH company, Lintech Instruments of Cambridge, has developed electron beam equipment for use in the manufacture of semiconductor devices much faster than the present thermal techniques. The electron-beam annealer, called Sem in its production form, will have a throughput of 200 wafers per hour for ion-implanted semiconductor materials.

FAST SYSTEM FROM SYSTEK

## SYSPAK/70

A POWERFUL DEC™ BASED RANGE OF SYSTEMS DELIVERED AND INSTALLED COMPLETE, NEW AND FAST

ALL PACKAGES INCLUDE THIS BASIC HARDWARE AND SERVICES

11/70 CPU, 512KB, LA120™  
TS11-B 1600BPI MAGTAPE™  
DISC CONTROLLER  
16 LINE MULTIPLEXER  
10 x VT100™ COMPATIBLE VDUs  
600 LPM BAND PRINTER  
8 DISC PACKS  
OPERATING SYSTEM + SYSGEN  
DELIVERY + INSTALLATION\*

SYSPAK/70-M1

2 x 67 MB DISC DRIVES

£94,000

SYSPAK/70-M2

2 x 256 MB DISC DRIVES

£100,000

SYSPAK/70-E1

2 x 67 MB DISC DRIVES

£97,500

SYSPAK/70-E2

2 x 256 MB DISC DRIVES

£103,500

ALL PLUS VAT

Complemented by full h/w maintenance and software support and applications including order processing, word processing, sales/purchase/nominal ledger, payroll, stock control, and much more

WATCH FOR SYSPAK/34 /44 /750 /780 OR CALL NOW

**SYSTEK** NORTH FINCHLEY  
LONDON N12 0AZ  
LTD

01-349 2911/4

01-349 9267/8

TELEX 8952836

\*Delivery and installation

\*Registered trademarks of

\*Offered subject to

continued availability

OR LEASE AT HIGHLY ATTRACTIVE RATES







## Help for travel agents

COACH operator National Express is using Prestel experimentally to provide details of fares and timetables on 28 of its busiest routes in and out of London and Birmingham.

During the one-year experiment, which started last week, National's marketing department plans to monitor the use made of the system by travel agents and see if ticket-issuing is speeded up by it.

The details occupy 80 Prestel pages within the database maintained by London-based umbrella information provider AVS Intext. A total of 1,352 travel agents currently have Prestel terminals.

## BBC spec revised

HAVING shortlisted three microcomputers for use with its forthcoming television series First Byte, the BBC has revised the specification.

Additional requirements were decided after running a pilot programme and include the ability to download software from Ceebus. The choice had been narrowed down previously to Sinclair ZX80, Newbury Computing NewBrain or Nascom and the target price remains under £200.

# TV adapters could bring down cost of Prestel

THE block on the growth of Prestel caused by the high cost of user terminals could be lifted with the appearance on the market of several television adapters selling for around £200.

Tangerine Computer Systems, of Ely, Cambridgeshire, has installed one of its Tantal adapters in each of the 10 Prestel regional centres for demonstrations, and aims to start delivering to mail-order customers by the end of the month.

Meanwhile it wants to line up 400 dealers and is wooing a couple of dozen including television rental companies such as Granada, Rediffusion and Visionhire.

Anasone's new subsidiary Viewdata Business Systems has ordered 100, Tangerine's marketing manager Peter Harding told Computer Weekly, and interest has been shown by potential dealers in Germany, Switzerland, Holland, Belgium and Italy. An order for 5,000 may come from Brazil.

## Later versions

Production plans are for 1,000 this month, 3,000 next month and 6,000 in March. Parts have been ordered for 50,000 units. A £200 printer is planned for about two months hence, probably an imported model, and printer and cassette recorder interfaces are built-in.

The Tantal has a 16-key keypad built in and, with measurement of 9in x 6 1/2in x 2 1/2in, is claimed to be half the size of competitors' devices. Later versions are planned to have alphanumeric keyboards and interface for connection to a microcomputer.

Tangerine designs and makes its own microcomputers, but because of the volumes envisaged for Tantal, production has been subcontracted to Brookes of Poole in Dorset, which makes radios for Boots and marine communications equipment.

The Tantal is based on Mullard's Lucy chip, which provides the telephone line and peripheral interfaces and works in conjunction with the Mullard teletext chip which is already in use in 120,000 teletext decoders in the UK.

Harding said that the biggest battle his company has been fighting was for credibility, because other manufacturers had announced similar plans for volume production, but had not carried them out. Tangerine recommends a retail price of £170 plus VAT, based on a price to dealers of £125.

A second manufacturer, Radofin, is also basing its viewdata adapter, the VDX 1000, on the Lucy chip. Aiming to start delivery from the end of next month, it recommends a retail price of £199.95 including VAT and hopes to sell 40,000 units during the current year.

Production is to take place in Radofin's own factory in Hong Kong, where it also makes the £199 teletext decoder. It has sold 15,000 in the year since its launch. Distribution in the UK is likely to be handled mainly by Advanced Consumer Electronics of Wembley, Middx, which uses the brand name Acetronics.

## Modification

For distribution overseas, Radofin is talking to Teletext and Saba in Germany and General Telephone & Electronics in the US, but no firm agreements have yet been struck. Potential US customers have not yet chosen between the different coding schemes and display methods used in the British, French and Canadian viewdata systems, but Radofin is prepared to modify its device in these areas as well as to suit the US NTSC colour television modulation standard.

The VDX 1000 includes printer and cassette interfaces, but the company also plans a later version with an alphanumeric keyboard.

Mullard expects its Lucy chip to sell as well overseas as in the UK and is talking to manufacturers in Scandinavia and the US. Already half its sales of teletext chips go overseas and total production so far is expected to reach two million devices next month, having

reached one million last June.

One manufacturer that has chosen not to use the Lucy chip, or the alternative viewdata chip set from General Instruments, is Zycor, whose Teledex 2000 adapter is based on National Semiconductor's SCMP micro.

Zycor's reasons include the lack of a second source for the specialised devices and the feeling that a dedicated chip will prove less flexible when it comes to implementing future enhancements.

The Teledex 2000 is recommended to retail at £200 plus VAT and deliveries have started to mail-order customers while the company sorts out dealer arrangements.

## Monitor

Two additional versions are planned for later this year, called the Teledex 4000 and 9000, to sell at £450 and £600. The first is designed to provide a continuously changing display from a built-in cassette recorder and the second includes a 14-inch colour monitor and an optional alphanumeric keyboard.

Oracle Electronics is another company selling a viewdata adapter at the slightly higher price of £250, while the price of the well-established adapter from IVE Labgear has now fallen to £350 from an initial £650.

## Italy is to join

ITALY has become the country whose Prestel software, hardware for public use trials and the first where trials or even private ones use the standards.

Italy's system, based on 4082, is to be launched this spring for STET, the Italian telephone company, one of the few which share the government-controlled company's telecoms services.

## Eye on view

PRIVATE viewdata system from Honeywell terminals up and running in the UK, the Vickers-Vic products company, application is the first, information about contracts.

## Tangerine

ANSAFONE's subsidiary, Viewdata Systems of Cambridge, has become a distributor of the Tantal adapter, a viewdata product, the terminal from IVE Labgear, and a guarantee on parts and plans to supply a £170 plus VAT. It will handle train operators and a Prestel registration.

## Ma Bell deal

A SETTLEMENT in the anti-trust suit between AT&T and the US government over telephone and data services has been reached. The settlement allows AT&T to increase its long distance and data services in return for R&D facilities and other companies.

## Cwbran

A BRITISH VDU will be shown at the Cwbran based on terminals within a few months. The Smart 80 Plus has been built for nine months and is featured in the book by Michael Parsons, Parliamentary Under-Secretary, Welsh Office.

## Ads on Prestel

A CLASSIFIED service for new and used equipment has been set up by Prestel by General Instruments of Bath. It appears on 3202190.

# France goes into semis with a cut-throat image

by Jack Gee

"WE are entering the semiconductor industry with a knife between our teeth", said Roger Faroux, French chief of the alliance between National Semiconductor and Eurotechnique Saint Gobain-Pont-a-Mousson, when he opened their new factory at Aix-En-Provence.

The image of cut-throat competition was well chosen to symbolise the price war and the drop in sales which threaten France's fledgling electronics components industry.

Paul Mirat, chairman of EFCIS, the components subsidiary jointly owned by the French Atomic Energy Authority (CEA) and Thomson-CSF, pinpoints the second facet of the threat when he says: "Only eight months ago a sophisticated integrated circuit with a memory function sold for 120 Francs. Today you pay a top price of 15 Francs."

To enhance its chances in an increasingly competitive market Saint Gobain has joined forces with mighty National Semiconductor, and Matra with Harris.

The French regard American partnership as vital to build up a components industry with 600 million Francs of French government help between now and 1985.

The Americans view their French investment as an opportunity to establish a series of bridgeheads which will guarantee them long-term markets in France.

Charles E. Spork, head of National Semiconductor, explains:

"We are right in the middle of the depression and the price war. When will we move out of this situation? I don't really know. Perhaps in six months, eight months or longer". Motorola predicts that, after the current slowdown, the market will pick up in the middle of the current year.

But Motorola is reducing working hours at its Toulouse plant, and Saint Gobain is laying off personnel at Rennes, in Brittany, one of France's highest unemployment areas.

## Irons in fire

These are discouraging auguries for the French government's target of a components industry flying the tricolor flag and able to meet the needs of a national French market worth 2.3 billion Francs in 1985.

Eurotechnique will have to move ahead fast to achieve a turnover of 400 million Francs and make a profit out of its 200 million Francs investment by this date.

In launching the first Franco-American MOS integrated circuits for France's national component plan, Matra is trying to minimise risks by putting several irons in the fire.

Matra's chairman Jean-Luc Lagardere is working simultaneously on technology covering CMOS, bipolar, and NMOS. This could enable the huge French firm, which has just taken over the Hachette publishing empire, to obtain a big slice of a market em-

bracing cars, radio-television and telecommunications.

Matra is now putting the finishing touches to an agreement with Intel and Mostek which will complement the association with Harris.

EFCIS, the Thomson-CEA partnership, says its plan is to innovate and create in every field of components. Chairman Paul Mirat comments: "By defining imaginative products and finding original uses for them, we are bound to win in the end. There is no point in wasting our finances on costly basic technology".

Mirat adds: "Let's make the most of our grey matter. That is how Intel succeeded so well. We hope to exceed a turnover of 500 million Francs with a work force of 1,250 by 1985."

## Price cuts

But the French fear that the Americans may follow the example of their Japanese competitors by ruthless price slashing. Business observers who doubt the validity of the alliances signed between the French and US manufacturers, say the transatlantic partnerships could crumble under a wave of price cuts by Nippon Electric, Toshiba, Texas Instruments, Intel, Fairchild, Mostek, RCA and General Instruments.

The five French manufacturers, Thomson-CSF, EFCIS, RTC, Eurotechnique and Matra Harris, would then be powerless to meet these sledge-hammer blows.

The French Post Office has promised to buy one and a half billion Francs' worth of semiconductors from this quintet between now and 1985.



CHARLES SPORK, head of National Semiconductor. "We are right in the middle of the depression and the price war."

After an encouraging year in 1980, the French components industry is beginning the new year under the shadow of concern for orders which show signs of flattening out during the coming months.

The prospects for MOS are an unknown quantity, after a year during which orders doubled. But overall sales of components are expected to rise by between 15 and 20% until the summer, compared with an increase of 30% during 1980.

The campaign for the election at the beginning of May of France's next President of the Republic is a key cause of uncertainty about the prospects for the French economy. The government is at present pumping in funds to maintain consumption levels.

The regional computer centres getting Rapport are Bath, London, Manchester, Aberdeen, Aston, Birmingham, East Anglia, Hull, Kent, Leeds, Liverpool Loughborough, Queen Mary College (London), Sheffield, Southampton, Stirling, University College London, Warwick and York. The hardware will include Prime, CDC, Burroughs, ICL, Digital Equipment, Honeywell and AMD.

Rapport is the first commercially released database system to gain a firm hold on the market. Logica has already implemented it on a wide range of machines, including Data General, ICL, Univac, Burroughs, Digital Equipment, IBM, Prime, DEC, Harris, and Honeywell, and claims that its portability makes it easy to extend to new machines.

## Rapport for 18 varsities

SYSTEMS house Logica has scooped a major contract with the Computer Board to supply 18 British universities with the relational database Rapport.

The universities will benefit from what a Logica spokesman described as "a generous discount". Since academic and multi-user sites get special terms.

Logica won the contract on Rapport's performance when undergoing trials on Birmingham University's Digital Equipment 20 and at other sites on ICL equipment. Portability was also a major factor, since researchers will be able to use the same database on a large number of different machines.

## Teaching

Rapport will be installed at the university computer centres to provide data on a wide range of activities: teaching and research in database methodology as well as giving engineers, and even researchers in the humanities, easy access to cross-referenced information.

The regional computer centres getting Rapport are Bath, London, Manchester, Aberdeen, Aston, Birmingham, East Anglia, Hull, Kent, Leeds, Liverpool Loughborough, Queen Mary College (London), Sheffield, Southampton, Stirling, University College London, Warwick and York. The hardware will include Prime, CDC, Burroughs, ICL, Digital Equipment, Honeywell and AMD.

Rapport is the first commercially released database system to gain a firm hold on the market. Logica has already implemented it on a wide range of machines, including Data General, ICL, Univac, Burroughs, Digital Equipment, IBM, Prime, DEC, Harris, and Honeywell, and claims that its portability makes it easy to extend to new machines.

## Yellow pages on viewdata

AMERICA'S second-biggest telephone company, General Telephone and Electronics, is preparing to launch a viewdata-type service called "Yellow Pages" which would carry classified "yellow pages" type information with local newspapers as franchised operators.

Participation in the service has been offered to the Washington Post and other newspapers, and GTE wants five letters of intent before it starts up.

GTE, which last year ran trials based on a viewdata system supplied by Argon, now plans to use low-cost monochrome terminals designed for the French electronic telephone directory by Telet, a subsidiary of CIT-Alcatel.

agreement in the US - with Source Information Service recently bought by Readers Digest - under which it hopes to supply 250,000 terminals over the next three years.

Argon is concentrating on the business systems market, showing little interest in selling terminals, and no other British company is ready to sell large quantities of viewdata terminals into the US, although viewdata chip sets are being demonstrated to US television makers.

AT&T is also believed to be planning "electronic yellow pages" as one of the "information utilities" to be based on its Advanced Communications Service which has been suffering delays because

of development problems. However, legislation on communications now in preparation may prevent AT&T specifically from running such a service.

These and other proposed services are described in a report called Electronic Yellow Pages, published by market research consultant International Resource Development of Norwalk, Connecticut.

The report suggests that the electronic yellow pages market will grow to \$5 million this year, \$250 million in 1985 and \$2,500 million in 1990, by which time it will reduce paper consumption by 50,000 tons. Participants may include time sharing bureaus, as well as telephone companies, cable television companies and publishers.

## Now hear this . . .

A VOICE controlled Prestel terminal was demonstrated at the National Maritime Institute conference in London.

The conference was designed to spread the use of new communications methods such as Prestel in the marine industry.

Voice input was handled by a voice data entry terminal, the T600, from Threshold International Electronics of Beaconsfield, Bucks. The equipment was assembled as part of the Seaview project being conducted by Liverpool Polytechnic, CAP, Siemens and the Department of Industry in which a multi-function work station designed for shipboard use combines viewdata and teletext access with facsimile and telex

communication via radio and with local word processing and data processing.

The aim is for a database on land to replace much of the printed documentation currently used.

Five years ago Threshold voice data entry terminals were installed at the Royal Navy Hydrographic Establishment in Taunton, Somerset, for use with computer-aided chart production.

Recent developments include a speech verification system, and a speech recognition algorithm which improves input speed and demands less complete separation of words.

Specification of safety, signalling and display requirements for Prestel terminals has been agreed after a year of consultations between British Telecom, the British Radio Equipment Manufacturers' Association, the Telecommunications Engineering and Manufacturing Association and the UK semiconductor industry.

Designed to impose minimal restrictions on terminal builders, the specification will be published late next month by the Prestel organisation priced at £10.

Computer the... No, the Computer hasn't gone missing. The... in installing a computer when more significantly it... to assist the user in his art of separating the... Typically, these libraries are average computer users with... criminal record, and the Computer the... each year.

## Ma Bell deal

A SETTLEMENT in the anti-trust suit between AT&T and the US government over telephone and data services has been reached. The settlement allows AT&T to increase its long distance and data services in return for R&D facilities and other companies.

## Cwbran

A BRITISH VDU will be shown at the Cwbran based on terminals within a few months. The Smart 80 Plus has been built for nine months and is featured in the book by Michael Parsons, Parliamentary Under-Secretary, Welsh Office.

## Ads on Prestel

A CLASSIFIED service for new and used equipment has been set up by Prestel by General Instruments of Bath. It appears on 3202190.

## Univac joins the wonderful world of Disney

CINDERELLA meets the computer? Not quite so romantic as Prince Charming, but probably more commercial (although, come to think of it...)

Walt Disney's playground in Orlando, Florida, has caught up with modern technology with a £9 million order for Univac hardware ranging from mainframes to termi-

nals. Univac is to supply two 1100/60 multiprocessors, 21 of its V77 minicomputer range, including the 200, 500 and 800 models, two System 80s and 300 of a mix of UTS 400 and UTS 4000 terminals.

The minis will be used to control air conditioning and similar applications in a range of buildings at the huge Walt Disney World park. The mainframes will be part of a distributed processing network and will run general business accounting, hotel reservations, inventory and payroll.

Univac will supply basic software but Walt Disney is to develop much of its own for many of the applications.

Cinderella's castle at Walt Disney World in Florida (pictured right) is to have its talking computerised following a major order for Univac. (Picture copyright Walt Disney Productions.)

## Recruitment mergers likely

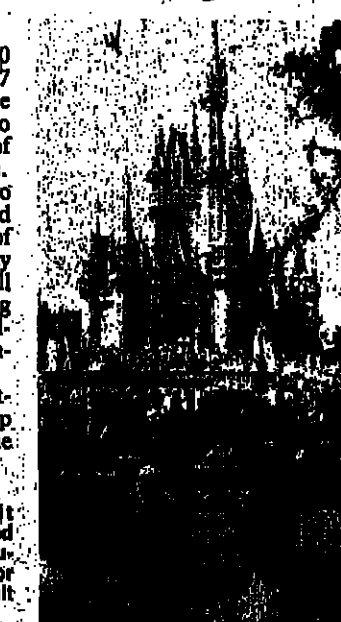
INDUSTRY sources suggest more mergers in the recruitment business. Leading consultancies say the economic climate is inhibiting employers' offering vacancies and that there are signs the number of skilled people is starting to match demand. As a result, companies have become more demanding when approaching recruitment consultants.

A recent indication of a shake-out among the consultancies was the integration of Thorpe Recruitment and Consultancy Services with Inbucan.

Mike Thorne, former Thorpe managing director, is now heading Inbucan's DP and contract personnel appointments.

## MDS half-year profits fall

MOHAWK Data Sciences blames technical difficulties with its IBM 3270 compatible machines. Early versions of the Trivet-80 developed faults, allegedly in externally supplied components, but these are now claimed by MDS to



Cinderella's castle at Walt Disney World in Florida (pictured right) is to have its talking computerised following a major order for Univac. (Picture copyright Walt Disney Productions.)

**LANGTON**  
LANGTON have been specialising in **VIEWDATA** systems for over 4 years. If you are wondering whether to use a Viewdata system, are developing a private system, or just need information on the world wide Viewdata scene, we can help.

Services offered include:

- Consultancy and training on all aspects of Viewdata from installation design to practical hands-on use.
- Supply of information on the world wide Viewdata scene.
- Supply of Viewdata software.
- Supply of Viewdata hardware.
- Supply of Viewdata terminals.
- Supply of Viewdata printers.
- Supply of Viewdata modems.
- Supply of Viewdata cables.
- Supply of Viewdata connectors.
- Supply of Viewdata documentation.
- Supply of Viewdata manuals.
- Supply of Viewdata software.
- Supply of Viewdata hardware.
- Supply of Viewdata terminals.
- Supply of Viewdata printers.
- Supply of Viewdata modems.
- Supply of Viewdata cables.
- Supply of Viewdata connectors.
- Supply of Viewdata documentation.
- Supply of Viewdata manuals.

For further information on Viewdata services, please contact LANGTON, please contact Ian Bell.

Unit 10 Information Systems Limited  
133 Oxford Street, London W1R 1ED. Tel: 01-494 9496

**PRICE CHECK!** SEE IF YOU CAN BEAT US FOR VALUE!

\* OFF-THE-SHELF DELIVERY \* SERVICE THROUGHOUT THE UK.

**LA 34 £595**  
**VT 100 £950**  
**LA 120 £1595**

**PLUS Hazeltine & Tally Terminals**

**MANAGEMENT CONTROL SYSTEMS**

Unit 10 Information Systems Limited  
133 Oxford Street, London W1R 1ED. Tel: 01-494 9496

**Safety conditions**

SPECIFICATION of safety, signalling and display requirements for Prestel terminals has been agreed after a year of consultations between British Telecom, the British Radio Equipment Manufacturers' Association, the Telecommunications Engineering and Manufacturing Association and the UK semiconductor industry.

Designed to impose minimal restrictions on terminal builders, the specification will be published late next month by the Prestel organisation priced at £10.

**Computer the...**

No, the Computer hasn't gone missing. The... in installing a computer when more significantly it... to assist the user in his art of separating the... Typically, these libraries are average computer users with... criminal record, and the Computer the... each year.

What could have gone wrong?  
So frequently is not an intractable problem. Our most common solution, based on the... have given to the Prestel Board and subsequently... for a number of internationally renowned clients... will be held on Thursday, Feb 22 1981 at the... Price Waterhouse Training Centre.  
Tickets are £20.00 plus £3.00 VAT each ticket.  
For all details please write or phone.  
DEERBROOK LIMITED, 52 HIGH STREET, LONDON EC2A 3EJ  
TELEPHONE (01-492) 2413

**MICROSTAR**

The Key to the Affordable Business System

- Do you sell Micro Computers?
- Do you want to sell one of the most affordable complete business systems on the market?
- A system with a multitude of operating advantages and performance features:
- Twin floppy disc drives incorporating 2.4 Megabyte storage as standard.
- 20 Megabyte Century Data Systems Hard-Disc add-on available.
- UPDATE - A complete Data Base Management System and Report Writer.
- A multi-user, multi-task Micro Computer with a comprehensive choice of general and specialist software written in the UK by computer professionals.
- A system backed by a nationwide maintenance service provided by Systems Reliability Limited.
- And still at an amazingly new low Dealer price of £3,500 (for the Double Density system).

Then we have the answer - THE MICROSTAR, the power-packed, multi-user Micro Computer, the system which outshines the rest.

If you would like further details about this opportunity and would like to discuss becoming a Dealer, pick up the telephone right now and dial:

Hemel Hempstead (0442) 63561/57157  
and talk to Hugh Chappell or Carol Cruickshank

**MICROSTAR** Sole UK Distributors: **DATA EFFICIENCY LIMITED**  
Marx Road, Maylands Avenue,  
Hemel Hempstead, Herts. HP2 7LE  
Telex: 826554.DATREFG

**Wilkes Computing**

For **DEC SYSTEMS**

**VAX 11/780**  
**PDP 11/70, 11/34's, 11/44's**  
**PDP 11/03, 11/23's**

**systems and software**

**VT 100 LA 120 LA 34**

**Home and Export Sales**

Digital Equipment Company Ltd.

**Wilkes Computing**  
Unit 10 Information Systems Limited  
133 Oxford Street, London W1R 1ED. Tel: 01-494 9496

**Wilkes Computing**

For **DEC SYSTEMS**

**VAX 11/780**  
**PDP 11/70, 11/34's, 11/44's**  
**PDP 11/03, 11/23's**

**systems and software**

**VT 100 LA 120 LA 34**

**Home and Export Sales**

Digital Equipment Company Ltd.

**Wilkes Computing**  
Unit 10 Information Systems Limited  
133 Oxford Street, London W1R 1ED. Tel: 01-494 9496











## OP SPOT

# When £80 a week is a small fortune

OPERATORS earning £4,031 a year can consider themselves as doing fairly well, according to a recent survey released in mid-January. National Analysis of Salaries and Wages is published by Reward Regional Surveys of Stone, Staffs.

The £4,031 is a median figure arrived at as a result of inquiries to 132 companies. The people who conducted the survey, which is based on all jobs in 293 private sector companies, stress the difference between a median and an average figure.

By ranking salaries from the highest to the lowest, the median salary is the one which stands at

the middle of the list. It is more sensible to quote median rather than average figures because the latter tend to be distorted by freak high and low figures.

Similarly, it means more to quote the quartiles and deciles of Table 1. A decile is a group of 10% of the entries fall between the upper and lower quartile and the range between upper and lower deciles is 90%.

The Computer Users' Year Book for 1980 has operations as a slightly more remunerative job. Its 1980 median salary figure for ops is £4,111 which is, incidentally, an

	senior operator	operator
Upper decile	£8,784	£5,500
Upper quartile	£6,060	£4,740
Median	£5,350	£4,031
Lower quartile	£4,646	£3,588
Lower decile	£4,036	£3,170

Table 1: How does your salary match up to what is on this chart? Reproduced by courtesy of Reward Regional Surveys Ltd.

18.23% increase on the 1979 annual salary of £3,477.

A senior operator, according to CUYB, could have compared his pay cheque with a median figure of £5,531 in 1980.

In the six months since spring 1980, the Reward Regional survey found operators' salaries to have increased by 10% while senior operators fared slightly better with a 13% median increase. That amounts to £398 and £650 respectively.

More generally, the survey gets into the almost inevitable business of making predictions although

none relates specifically to DP.

It says: "Recent low pay awards are still insufficient to make much impact on pay statistics. Rises over the six months show an annual rate of 17% and over the year the change has been 19%.

"So, pay rises are slowing down but not, as yet, dramatically." For 1981, increases of between 12½% and 14½% are predicted.

Taking the median predicted increase figure of 13½% - and placing a degree of trust in the findings of the survey - an operator would be justified in demanding an autumn 1981 pay rise of £534.

## How to make op shift safe against the industrial wrong

SOME computer operators have the opportunity to be dishonest on a large scale. But most cases of operator crime never come to light because it is not in a company's interest to publicise how it has been done.

Mailing lists, payroll and profit details and budget plans can all be of value. The op, who is often not earning a great deal, has easy access to the goods and is a prime target for temptation. That's the opinion of Malcolm Fry.

Fry says of his 15-year career in operations: "There isn't a job I haven't done." Now he is planning to publish a book on operations espionage.

"The op is someone low down the hierarchy with access to secret information denied to those with a far higher status," Fry explains. In order to minimise operator crime, he makes a number of draconian suggestions.

He thinks that security should be tightened with an alarm connected to the guard's office once the computer room is left vacant for

the night. Ops should not be allowed to take a computer room notice, "but it is to be a company, he or she is allowed to take a computer room notice."

"I know it seems a bit silly," but it is to be a company, he or she is allowed to take a computer room notice."

He recommends that should be destroyed. Drivers should be able to have the opportunity to remove the data from a computer room.

Perhaps the most serious suggestion is that the data should be removed from the computer room. Fry reckons that this is far from confirming the op, would actually be marking recognition importance.

## You, too, can be a sailing vessel

I FACED Christmas with a degree of uncertainty about my human identity. I had just subjected myself to the Morrisby Differential Test Battery, part of which sought to make a comparison between my personality and a sailing boat with outboard motors.

Three and a half hours were spent finishing sequences, doing mental arithmetic and the like and some days later I was given measurements of "concept speed, perseverance, personal confidence and intellectual confidence."

These qualities, in that order, were equated with a sail, a keel and two outboard motors.

It turned out that I was a fairly well-balanced kind of boat with a huge personal confidence-cum-outboard motor that forced me to go round in circles.

Should you have an idle moment on the night shift, you could

plug up on a good and set up shop as an analyst.

Have your subject sailing slowly but surely, though this wasn't what I did, gaze steadily at the greater ability to focus, to put them into action.

Another Mickey Mouse and pencil test is to make four drawings in square, an upside down circle and a square.

The square is meant to be a symbol of home, the future, the hope of sex and the full circle of fulfillment. Obviously, the

In a similar vein, we say that people's lives are one of three categories: ban or bird. I'm a bird with a horse's face. My home is a dice and that's a railway line.

## Consumers' crusade

GRAHAM LUND is a busy man. Apart from lecturing on operations and being ops manager for the Royal London Mutual in Colchester (Op Spot, January 8), he is chairman of the IBM CUA operational group.

Lund is standing down from the chairman's job in April, having done it for three years; however, he plans to become a CUA council member.

He says of the CUA: "We have no link with IBM and are completely autonomous. We're not a pressure group and don't wish to be seen as such. Our prime objec-

tive is to bring IBM up to date to discuss problems."

The CUA is an operational group of people using IBM systems. A group of 1,500 IBM users was set up in 1974 for the purpose of some old VDU's.

The VDUs were in a same truck which had no delivery to the CUA and up and running in 1974.

Now IBM is working on a system of transport in the next CUA meeting in Nottingham on February 27.

## Protocol makes its debut

PROTOCOL Operations' first event, Education and Training in Computer Operations, will be free. A date for what this new training company had to offer, the first forum will be at the Coburn Hotel in Bedford, London, on February 12.

The event will be chaired by Graham Lund, and Phil Wilson is one of the speakers. Both had strong links with Protocol Operations, with which Protocol is in close association. Lund is a selection editor to the magazine and

was to talk about the "All that has been said" by Phil Cartmel for the first time.

He added: "We will be the same because we are being recognised as a book's editor."

## COMPANY NEWS

## CAP Gemini Sogeti takes over Norwegian consultancy

THE giant French-based computer services group, CAP Gemini Sogeti, has extended its empire with the acquisition of the Norwegian software consultancy Data Logic. The latter firm was owned by Data Logic of the UK until 1972 when it was bought by its Norwegian employees.

According to CGS, Data Logic is the largest Norwegian company in the field of

professional computing services, excluding service bureaux. It employs 56 professional staff and chalked up a turnover of well over \$2 million in 1980, although this is trivial compared with the turnover of its new parent company.

CGS expects to report approaching FF600 million for 1980.

CGS has high hopes for rapid growth at

Data Logic in view of the boost to Norway's economy from North Sea oil.

Data Logic's existing customers include banks, shipping companies, the Norwegian government and the computer industry, including Norway's biggest domestically owned computer firm, Norsk Data.

The CGS empire in Northern Europe already includes companies in Sweden, West Germany, the Netherlands, Belgium and Switzerland. In the UK CGS jointly owns IAL Gemini with International Aeradio.

Last autumn CISI, the computer services subsidiary of the French Atomic Energy Commission, sold its 34% share in CGS to a group of French financial organisations.

CGS now has 3,000 staff.

## ICL shares still on the slide

ICL shares continued their downward slide and sank a further 10p to 48p last week. Stockbrokers Heseltine Moss predicted the shares would hold temporarily around 50p, and then fall to 30p.

Reports from the company suggest some improvement in overseas orders but this will probably still be at a high price in terms of profitability.

The breakdown of the talks in Geneva on Namibian independence has brought nearer an international trade embargo on South Africa, and simultaneously a threat to ICL's best market in Africa.

## Investment trust nets £97,000

EDINBURGH-based Independent Investment Trust, one of the biggest UK holders of shares in US high technology companies, and a major beneficiary from the Apple share launch had gross income of £330,000 for the six months ending December 1980. After interest, tax and other charges this worked out at £97,000 net.

Independent Investment trades on the unlisted securities market at a current price of 117p. The following companies appear among its holdings: Apple Computer (150,000); Centronics (25,000); Data I/O (34,884); Lanier Business Products (85,000) and Sensoromatic (80,000). The company holds 875,000 shares in United Scientific Holdings and 90,000 shares in Wilmar R&D, both UK companies.

## General Electric buys US Cad/Cam manufacturer

CALMA, one of the world's leading manufacturers of Computer Aided Design/Computer Aided Manufacturing systems, is being bought by the giant General Electric Co of the US for \$100 million.

The deal has been welcomed by Calma executives because GE is a far bigger user of Cad/Cam systems than its existing parent, United Telecommunications of Kansas City, Missouri.

There are two unusual aspects to the deal. One is that GE will pay United Telecom an additional amount in 1985 depending on the performance of Calma in the years 1981 to 1984. It could be as much as \$70 million.

The other is that under the US anti-trust laws GE may have to sell off the large minority share it

currently holds in another leading Cad/Cam firm, Applicon. GE's 22.7% holding in Applicon is assigned to its venture capital division, Business Development Services Inc, while the 100% being taken in Calma will lead to it becoming part of GE's Industrial Electronics Business Group.

Calma points out that it will remain completely autonomous after the GE takeover. At the same time it expects to get all or most of GE's annual expenditure on Cad/Cam systems which is now running at about \$20 million.

Based at Sunnyvale, California, Calma has established a temporary headquarters for Europe at Kingston-upon-Thames, Surrey, but is going ahead with its plans to set up a permanent HQ nearer London Airport.

## Dollar lost on every sale

CONSOLIDATED Computer Inc, a company owned by the Canadian government and Fujitsu of Japan and with 10% of its shares publicly traded, has reported losses of £9 million on sales of \$9.7

million for the first nine months of the year. Consolidated, which manufactures Key edit equipment supplied to ICL and Fujitsu, lost over \$10 million on sales of \$22.7 million last year.

## New machinery

O'Malley has just signed a £1.4 million cheque for a Univac 1100/62 to replace one of the bureau's pair of maximum configuration 1100s and will install an 1100/61 machine in place of the other early this year.

In addition it is upgrading its IBM 370/148 to a 3431 at a cost of £500,000 and took on new offices in London's Centre Point last year.

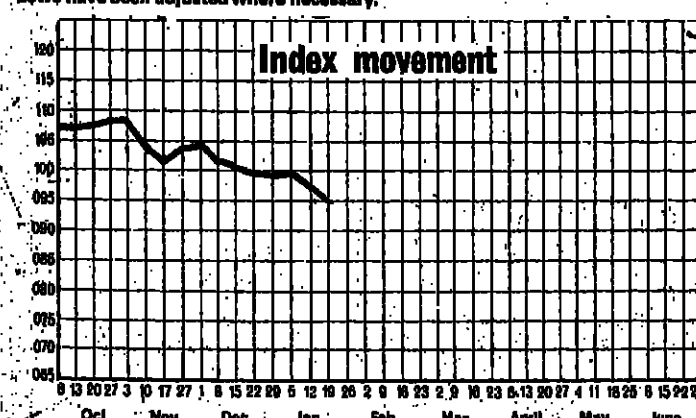
The new machines are part of a three-year investment programme at the bureau's Milton Keynes base, aimed at strengthening its position in engineering and scientific, City and institutional, and special commercial applications. The latter includes the provocatively named Scicopath database on road junctions for the Ministry of Transport.

Up to 20% revenues for both Scicon Consultancy International and Scicon Computer Services came from parent company, BP. The two companies' accounts do not include the results of SCIS; the Scicon company in West Germany.

## CW SHARES TABLE

Date: 10/1/81		Index: 90.11 Change: -4.84	
Price	Share	Price	Share
118	118	118	118
119	119	119	119
120	120	120	120
121	121	121	121
122	122	122	122
123	123	123	123
124	124	124	124
125	125	125	125
126	126	126	126
127	127	127	127
128	128	128	128
129	129	129	129
130	130	130	130
131	131	131	131
132	132	132	132
133	133	133	133
134	134	134	134
135	135	135	135
136	136	136	136
137	137	137	137
138	138	138	138
139	139	139	139
140	140	140	140
141	141	141	141
142	142	142	142
143	143	143	143
144	144	144	144
145	145	145	145
146	146	146	146
147	147	147	147
148	148	148	148
149	149	149	149
150	150	150	150

The table shows the closing prices in London on Friday and in America on Thursday. The share index is based on the prices of the UK companies in the table. High and Low have been adjusted where necessary.



### UNIX VERSION 7

- Z8000 16 bit processor
- 256k bytes memory
- 10m bytes Winchester disk
- Mega Tape Back Up
- 4 user Unix v7 license
- C, PASCAL z8000 Assembler

£11,000

### SCAN 3 SUPER MICRO

WITH DISK DATA CACHE

- Z8000 16 bit processor
- 256k bytes memory
- 10m bytes Winchester disk
- Mega Tape Back Up
- 4 user Unix v7 license
- C, PASCAL z8000 Assembler

£14,000

ALSO FORTRAN COBOL & BASIC

\* Full range of VDU's and printers \*

Phone: Joel Abramson, Manager

Equation 4: Spinnings Division

Quinton Rd, CW 10

Scan Computer Systems Ltd

Chapmanbury House, Church Street

Stoke-on-Trent, Staffs ST4 4LZ

Tel: 09045 4432 Telex: Scandis 0 8724

UK NATIONAL ENGINEERING MAINTENANCE COVER

### 11/23 UPGRADE

KDFII PROCESSOR  
256KB MEMORY

PRICE £2,150

### 11/23 CHASSIS

KDFII PROCESSOR  
256KB MEMORY  
DLVII-J INTERFACE  
CHASSIS 8 x 4

PRICE £3,200

### 11/23 SYSTEM

KDFII PROCESSOR  
64KB MEMORY  
DLVII-J INTERFACE  
CHASSIS 8 x 4  
32 MBYTE HARD DISK  
CABINET

PRICE £7,860

## LOW COST 11/23

FROM

ARROW

ROSEMOUNT TOWER, STAFFORD ROAD, WALLINGTON, SURREY SM6 8RW.

ARROW COMPUTER SYSTEMS LTD

Telephone: 01-847 0862

# CB - the countdown has begun!

Get ready for Citizens Band radio with a brand-new magazine that tells you everything you want to know. We show you how CB works and how to use it. We've got a full colour spread of customised American trucks. We offer special deals on CB World sweat shirts, T-shirts, caps and badges. And we ask: should we use US Truck Speak or create our own English jargon? And what about the radio amateur - and the aircraft modeller? Tell us what you feel. Get involved - and get this very first issue of CB World!



FIRST ISSUE OUT NOW 60P

# Floppy disc drives and Winchesterstors from Micropolis

Whether you require a single floppy disc sub-system or call off quantities of Winchester type discs as an OEM, Sintrom can help you. Call us today to discuss your problems, and with our competitive pricing policies we can offer you an economical solution.

**Sintrom Electronics**

Sintrom Electronics Ltd  
Arkwright Road, Reading, Berks RG2 0LS  
Tel: Reading (0734) 85464  
Telex: 847395





Robyn Lane, seated at Portway School's Cado 20 computer, and Michael Rees (right) are two of the three 17-year-olds who have started a company, Software Six, supplying services to other Cado users. Profits return to the school - and headmaster John Larkins looks on approvingly.

## Sixth form goes into business

IT'S not only policemen that are getting younger - so are entrepreneurs. You don't even need to have left school these days before starting your own business.

Sixth formers at the Portway School, Bristol, have set up a company, Software Six which will use the school's own Cado 20 system to take over some of the services now offered to other Cado users by UK distributors DRG Business Machines of Weston-super-Mare and London.

Dr J. Wedgwood explained that severe physical handicap can mask a normal and active intelligence. "It is important to test the mental function of each patient, so that

# 'Micro'-techniques to serve the incurable

AS I walked down the long corridors of the Royal Hospital for Incurables at Putney, a door opened on my left and I looked into a huge room under a curving ornate ceiling.

It was the ballroom when this hospital served as a private house of a well-to-do family living outside London. Now it bore the faint marks of an institution, and was filled with chairs.

The Royal boasts an abundance of chairs - mostly wheelchairs to house the disabled patients. But this hospital is a far from depressing place to visit.

Most people seem happy, more so than outside the hospital; but for some, the severely disabled who cannot talk or write, life is trapped in a wheelchair can be a lonely business.

It is towards these patients that a new project undertaken by the hospital computer department is aimed.

Using micros, they hope to reach - and ultimately test - the intellectual capacity of patients who hitherto have been unable to communicate.

Dr J. Wedgwood explained that severe physical handicap can mask a normal and active intelligence. "It is important to test the mental function of each patient, so that

treatment can be prescribed."

Two other members of the project team are psychologist Sarah Wilson and computer specialist Geoffrey Wylie. Sarah is concerned primarily with the tests and in administering them to patients.

"At the moment we are concentrating on IQ-type and memory tests. One we are using is a variation of Raven's Matrices, where images of six pictures are shown on the screen and the next in sequence must be chosen from an array," said Sarah.

"All the tests are multiple choice so in most cases the patient just has to indicate one number."

### Special input

Dr Wedgwood intervened: "One of our big problems is that many patients have such severe motor impairment they cannot depress a key with one finger."

"We have had to design special input devices, such as a sensitive pressure bar with extremely large key-pads, so that the whole hand or even tongue could be used. It is fitted with an anti-bounce mechanism to iron out tremors."

"Others we are working on are using breath control - Inhalation and exhalation to move a cursor from j."

around a screen - and the harnessing of sounds, where a patient can only vary the volume, to a marker. Light signals are another possibility to investigate."

There are about 270 patients at Putney and 30 more at a centre in Brighton. All are adults and between a third and a half are so disabled as to fall into the class described by Dr Wedgwood.

Ten per cent of all patients are motor accident victims, while half are spastics or suffer from diseases like multiple sclerosis, Parkinson's or Stroke.

"Our eventual aim is to make up a battery of our own tests that we can standardise against existing psychological ones. In that way, they would be suitable for our particular needs, but assessable," Sarah Wilson explained.

Scoring may be a bit of a problem. Many tests are time-dependent - the Byesens ones, for example - while most of our patients cannot be time-restricted.

"I think we'll have to establish norms for our group of subjects, and then compare individual patients against them."

"One advantage is that the scores can be totted up quite partially by the computer; there's no danger of experimental bias from j."

I asked what the long-term needs were. "More and more we're working on a high budget. But a graphics package would be useful so that we could work to do things, just as the tests."

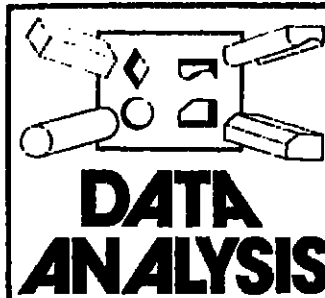
Geoffrey Wylie agreed. I responsible for the computer aspects of the project and both the hardware - as linked to a specially large aid vision - and some of the programs, mostly in Basic, a bit of machine code.

He said, "Luckily, there constraints on programs but we want them open soon as possible. They'll keep me busy for a few months."

Sarah explained the longer-term aims.

"What we would like to do is to have terminals dotted at the hospital at various levels where any patient can run even play computer games, mood takes him or her inputs could link the hospital outside world."

"Perhaps we may even be able to teach the patients to use it would counteract the boredom they face now, added."



THIS series has been concerned with describing the techniques CACI employs to analyse and design systems, but very little has been said as yet on how the techniques fit together into the stages of a project.

Once all the techniques have been covered, the last articles will be devoted to describing the sequencing of tasks, but it is worth describing briefly the phases which will have been completed before access path analysis is started, in order that the technique can be placed in context.

Access path analysis normally begins once the framework for the project has been completed, in the form of global entity model, functional hierarchies and data flow diagrams for the upper levels. In addition, a development strategy should have been agreed, selecting the areas for detailed analysis and defining which areas and functions are to be computerised.

The purpose of access path analysis is as follows:

- To check the entity model to ensure that all necessary entity types and relationship types are recorded.
- To provide the database designer with all the basic information needed for database design.
- To bring the results of functional analysis together so that if there are changes to the function it is clear which changes are needed to the model, and if there are changes to the model it is clear whether it affects the functions.
- To help the systems analyst develop a clear understanding of his system in terms of the data structure.

# The technique of access path analysis

## Section I - Part 14

of our series describing a system design methodology

by Rosemary Rock-Evans

- To provide all the basic information for the next phases in the project: entity life cycles, transaction design, program design.

Functional decomposition provides the analyst with a function hierarchy of all the functions and sub-functions which the business performs.

At the detailed analysis stage, the functions which are to be computerised are known, and it is a subset of these functions which are analysed during access path analysis.

These are the functions which are triggered by events external to the system, and which are supported by the computer system. As an example we will use the "Make Tea" function (see Figure 1) and assume that we are designing a computer robot system.

It has been decided that the robot cannot be trusted with laying out the tea things, but can be trusted to boil the water in the kettle, warm the teapot, put the teabag in the teapot and pour the boiling water in the teapot. He cannot be trusted with pouring out the tea.

The external event which will start the robot working is thus the "Make Tea" event, where it is assumed that we can lay out the tea things while he is doing the rest.

We will tell the robot all he needs to start his part of the make tea function, i.e. whether or not the teapot is warm. Once he has performed the tasks involved in the "Boil Water in Kettle," "Warm Teapot," and "Put Teabag in Teapot" functions, however he cannot proceed any further, because information on the event of the kettle having boiled is needed.

He has thus produced "outputs" - a warm, tea-filled teapot and a boiling kettle, but he can go no further until we tell him the kettle has boiled. Then he can perform the "Pour Boiling Water into Teapot" function.

The two functions we would therefore analyse during access path analysis would have been the part of the "Make Tea" function which included the "Boil Water," "Put Tea in Teapot" and "Warm Teapot" functions, and then a second function: "Pour Boiling Water in Teapot." We may in fact have redrawn our function hierarchy to cater for this change before doing this study, so that the three computerised sub-functions are grouped together under one function.

What important points about the functions thus emerge from this example?

- Firstly, the function has one input, i.e. all the information needed to complete the function is available to it at the time it is being performed. (For example, a set of exchanges between a terminal user and a system in an online environment would be included within this definition.)
- Secondly, multiple outputs may result.
- Thirdly, the function must be capable of being performed as an interrupted activity. This does not mean that it has to be performed from beginning to end every time - the functions may have to be aborted because of invalid input, e.g. No Teabags. The function may not be interrupted by other events which are triggered by other events during its performance.

When we reach the stage in design where the transactions are actually being designed (these elementary functions, as they are known, are the basis of the transactions). The designer may choose to make more than one transaction initiating the same elementary function: for processing reasons, e.g. to deal with exceptional conditions or an online environment. Alternatively he may group elementary functions under one transaction, e.g. "where the functions being performed are sufficiently similar, not in least two separate transactions, which are triggered by the function "Make Tea." "Visitor Ask For More Tea" might cause the function "Make Tea." The visitor

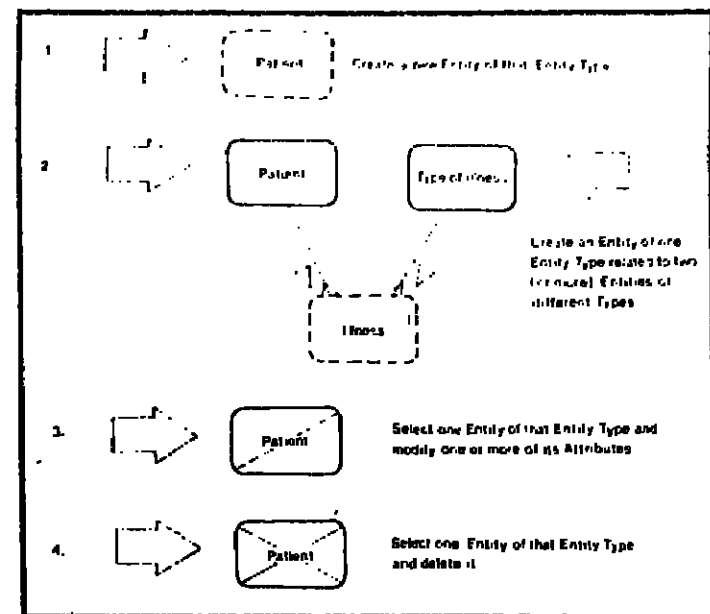


Figure 3. Diagrammatic conventions: types of update.

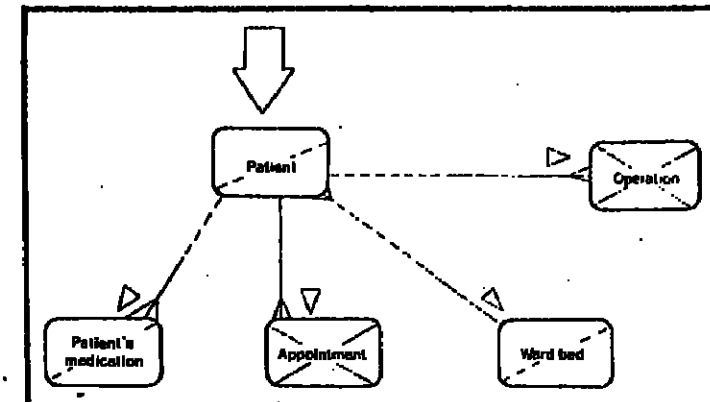


Figure 4. Function: Handle Patient's Death.

are used to draw the functional models. "Handle Patient's Death" is shown.

In this article the basic rules for determining elementary functions have been described and the diagrammatic conventions used to represent updates are shown. Some example functions are listed below to illustrate each type of update.

1. Record the details of a new patient.
  2. Record details of the illness of a patient.
  3. Change the name of a patient.
  4. Delete details of a patient.
- The entity model and descriptions of the elementary functions are shown in Figure 4 the functional model for the very simple function:

The Data Analysis methodology was developed at CACI by Ian Palmer.

## PEOPLE and EVENTS

### DP manager promoted to director at IBM

THE board of directors of IBM Ltd has elected Richard Marriott, director of IBM United Kingdom, to the post of director of IBM Data Processing.

Mr Marriott, who has been appointed public affairs director, was born in Hampshire and educated at Wellington College, the Royal Military Academy, Sandhurst (where he was awarded the Queen's Medal) and the University of Cambridge, where he gained an honours degree in Mechanical Sciences.

Between 1961 and 1967 he served with the Gurkha Engineers in the Far East, including a year of two years in private secretary to the Governor of North Borneo.

In 1967 his experience in the computer industry began when he joined IBM UK as a data processing salesman. He has since held several management positions both at the company's head office and the Bristol branch office.

Until his new appointment he was DP manager, South Western.

John Collins has been appointed computer products sales engineer at Ampex. He joins the company from Data Translation.

Tom Winter, managing director of ICS Computers, has been elected chairman of the Irish Computer Services Association. Pat Chambers of COPS is vice-chairman.

Alan Taylor has been appointed sales manager at Sigma Electronics. He was previously a sales engineer with BML and later joined Sigma as sales executive.

George Duffield, commercial director for IAL, has taken on the additional role of managing director of the company's International Hospitals Group, a medical services associate company.

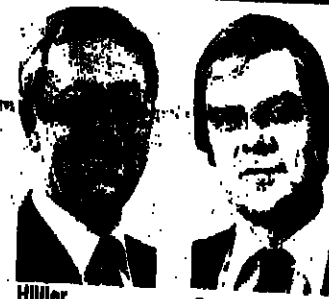
Patrick Lennon, formerly publicity manager, has been appointed head of public relations.

Two assistant general managers have been appointed. They are Mike Chick, who will work in the data products group, and George Sellers, in manufacturing.

George Duffield, commercial director for IAL, has taken on the additional role of managing director of the company's International Hospitals Group, a medical services associate company.

Patrick Lennon, formerly publicity manager, has been appointed head of public relations.

Two assistant general managers have been appointed. They are Mike Chick, who will work in the data products group, and George Sellers, in manufacturing.



Alan Senior has been appointed managing director of AM Vantage. Terry Cave has been appointed managing director of Control Data.

John Collins has been appointed computer products sales engineer at Ampex. He joins the company from Data Translation.

Tom Winter, managing director of ICS Computers, has been elected chairman of the Irish Computer Services Association. Pat Chambers of COPS is vice-chairman.

Alan Taylor has been appointed sales manager at Sigma Electronics. He was previously a sales engineer with BML and later joined Sigma as sales executive.

George Duffield, commercial director for IAL, has taken on the additional role of managing director of the company's International Hospitals Group, a medical services associate company.

Patrick Lennon, formerly publicity manager, has been appointed head of public relations.

Two assistant general managers have been appointed. They are Mike Chick, who will work in the data products group, and George Sellers, in manufacturing.

George Duffield, commercial director for IAL, has taken on the additional role of managing director of the company's International Hospitals Group, a medical services associate company.

Patrick Lennon, formerly publicity manager, has been appointed head of public relations.

Two assistant general managers have been appointed. They are Mike Chick, who will work in the data products group, and George Sellers, in manufacturing.

George Duffield, commercial director for IAL, has taken on the additional role of managing director of the company's International Hospitals Group, a medical services associate company.

Patrick Lennon, formerly publicity manager, has been appointed head of public relations.

Two assistant general managers have been appointed. They are Mike Chick, who will work in the data products group, and George Sellers, in manufacturing.

George Duffield, commercial director for IAL, has taken on the additional role of managing director of the company's International Hospitals Group, a medical services associate company.

Patrick Lennon, formerly publicity manager, has been appointed head of public relations.

Two assistant general managers have been appointed. They are Mike Chick, who will work in the data products group, and George Sellers, in manufacturing.

### New post at Racal-Redac

THE newly created position of deputy managing director at Racal-Redac has been filled by Bill Hillier, who has played a major role in developing the company's computer-aided design systems. The appointment comes at a time when the company is expanding into the markets of the US and Europe.

Hillier will be responsible for all activities on the Tewkesbury Gloucestershire, site where development of CAD systems takes place. He will also co-ordinate research and development programmes in West Coast US, France and Scandinavia.

Previously, he worked for 18 years at Racal, where he was deputy managing director of Racal-Redac, a subsidiary of Racal, which was formed in 1970 to join Racal, when it was pointed technical manager of all Racal-Redac printed circuit and electronics division. In 1971 he was promoted to production director, because technical director was later.

For education services, Payne, regional manager for personal services, and David Taylor, regional manager for personal services, are promoted to within the Control Data group.

Victor Oehl has been appointed assistant marketing manager at ESO Devices. He joins the company from ESO Africa Inc where he was previously adviser to the managing director.

Mike Henry has joined CMC as manager, responsible for the North Area and Scotland. He joins from ICL.

Geoff Squire has been appointed group manager at CACI, where he will be responsible for the group's market manager.

Alan Taylor has been appointed sales manager at Sigma Electronics. He was previously a sales engineer with BML and later joined Sigma as sales executive.

George Duffield, commercial director for IAL, has taken on the additional role of managing director of the company's International Hospitals Group, a medical services associate company.

Patrick Lennon, formerly publicity manager, has been appointed head of public relations.

Two assistant general managers have been appointed. They are Mike Chick, who will work in the data products group, and George Sellers, in manufacturing.

George Duffield, commercial director for IAL, has taken on the additional role of managing director of the company's International Hospitals Group, a medical services associate company.

Patrick Lennon, formerly publicity manager, has been appointed head of public relations.

Two assistant general managers have been appointed. They are Mike Chick, who will work in the data products group, and George Sellers, in manufacturing.

George Duffield, commercial director for IAL, has taken on the additional role of managing director of the company's International Hospitals Group, a medical services associate company.

Patrick Lennon, formerly publicity manager, has been appointed head of public relations.

Two assistant general managers have been appointed. They are Mike Chick, who will work in the data products group, and George Sellers, in manufacturing.

George Duffield, commercial director for IAL, has taken on the additional role of managing director of the company's International Hospitals Group, a medical services associate company.

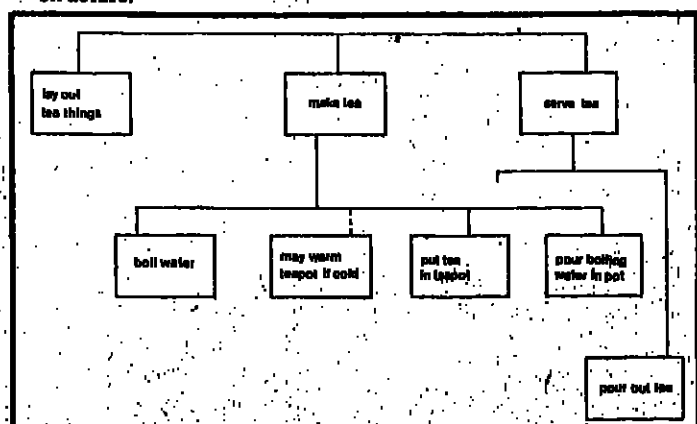


Figure 1. Function hierarchy.

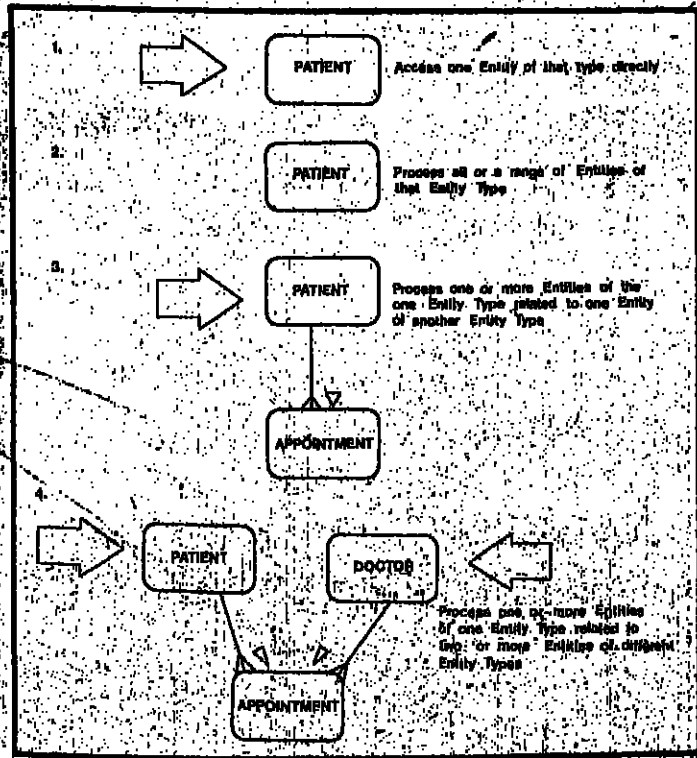


Figure 2. Diagrammatic conventions: types of update.

TDS offer the ADDS Regent 20 for as little as...

**£399**

it's the Best for the least

A super styled terminal, full upper & lower case, crisp easy to read 5 x 8 characters in a 24 x 80 character format. EIA interface: speeds up to 9600 baud. Full incremental cursor movement and addressability - auxiliary output interface; print transparent capability - plus monitor mode... all this for only £399. If you can find a higher value terminal at a lower cost than buy it.

And... while limited stock lasts, here's an even better opportunity

The ASCOT Tektronix compatible graphics terminal for just **£999**

The ASCOT terminal will give you 64K x 256 graphics with full Tektronix 4010 emulation.

Take advantage of these low prices ring our action desk on 0254 676921

TDS Ltd, Phoenix Road, Whitby, North Yorkshire YO21 2PH

TDS Ltd, Phoenix Road, Whitby, North Yorkshire YO21 2PH

**Puzzler**

WHAT is the next number in this sequence: given that the "intervals" between each pair of adjacent figures (1, 2, 2, 2, 7, 59, 21) are not significant.

1617 20 22 24 31 100 1217

See page 43 for solution.

● Despite my valiant efforts on December 11, to write out data solutions, several readers have come up with alternative layouts. One of these is in fact of great theoretical interest: since the four "quarters" (2 12 57; 1 9 12 4; 4 8 3 11 and 7 3 6 10) also total to the Magic Constant of 26. Here it is:

1	9
2	12
4	8
5	7
3	11
6	10



Financing the computer is a problem which has nurtured a tangled jungle of knowledge as convoluted as the innards of any mainframe. In this special supplement one of our own reporters looks at an entrepreneurial leasing com-

pany, Computer Financing; Parry Mitchell of United Leasing explains the role of his company as does Daphne Kandiah of Hamilton Rentals; and Allen Pawlyn advises on whether to rent, lease or buy.

## Cashing in on a booming market

by a Staff Reporter

KEEPING a watchful eye on a simple ratio could have avoided the horrors of multi-million dollar losses on computer leasing currently being agonised over by the Lloyd's insurance market.

That's the equally simple lesson being drawn by Peter Hunt, chairman and owner of Computer Financing, from the debacle caused by the collapse of IBM 370 values after the launch of the 4300 range in early 1979.

The ratio is the comparison between monthly rental cost and purchase price. IBM typically set its rental charge so that 48 monthly payments equalled outright sale price, says Hunt.

When that ratio on the later (38/148) models had crept up to something like 35:1 by late 1977, there was clearly something going on.

### Field day

IBM was encouraging the purchase of equipment which was to be superseded shortly. But US leasing companies continued to assume the same residual values (proportion of the cost not covered by lease payments) as before and had a short-term field day during which they were able to undercut IBM's rentals and maintain profit margins.

The upshot - which is history

as they say - was that Lloyd's of London and other insurers were left holding policies on equipment valued way above actual resale prices.

Hunt says that this shows up another vital aspect of the computer leasing business. Almost uniquely, secondhand values of IBM computers depend not on the physical age of the machine but on the age of the range.

A 3033 bought today will have virtually the same resale value as the same machine bought when the range was first introduced, Hunt notes.

Hunt also avoided leasing 3033 models as he reckoned the fact that they basically contained 370 architecture made 3033s vulnerable to the launch of a radically new IBM series. At the time of their launch, he was gearing up to the 4300 range, and had ordered around 24 million of machines as his first foray into leasing.

Similarly, Hunt now sees the H-series 3081 as causing a substantial fall in 3033X secondhand values. A 3031 bought new for between £600-700,000, for example, can now be had for around £200,000 secondhand.

Ergo, any leasing company working on a residual of more than that, or unable to re-lease and bring in income getting down to

that amount is in trouble before 3081 deliveries start to flow at the end of this year.

Hunt, 42, is that well-known animal in the financial world - the entrepreneur. With a background as programmer, then salesman, with NCR his first involvement with leasing came at Standard Chartered Bank on postings to Amsterdam and Düsseldorf.

A first venture on his own account in 1976, with Logan White in Megaleasing, came to an ignominious end after a row between the two partners.

A year later, with finance from various property deals, he formed Computer Financing to trade in secondhand IBM equipment - essentially buying on spec and then selling to leasing and renting companies.

Problems were not, it was essentially a warehouse operation, however, so Computer Financing began to supply end users in 1978.

Late that year, with a £3 million turnover already under his belt, Hunt began to expand what was still essentially a one-man operation, buying the IDC listing for the UK and Europe. With this database giving details of all IBM sites, together with the kit configura-



Seeing the lighter side of life in the leasing market are (left to right): Peter C. Hunt, chairman of Computer Financing International Ltd; Max Cowper-Smith, resident lawyer at Computer Financing International Ltd; and Stephen J. Measures, international sales director of Computer Financing.

tion; Hunt started the laborious task of working through the Computer Users' Year-book searching for prospects, with the object of getting into leasing.

### Controversy

Leasing has been generating much controversy of late. Some of it has been related to the collapse of Iel and the horrendous claims faced by Lloyd's.

Still more has stemmed from the controversy over flexible leasing, where a maintenance agreement can be terminated by a separate agreement, provided the lease takes another machine from the flexible leasing company.

This has attractions for the DP manager, whose main concern is to avoid restricting operation and meet the usually growing needs of his company.

But on one occasion at least a company which thought it could get out of a lease agreement with

the lessor (the bank) because the flexible leasing company would pay the residual, found itself with a water-tight agreement with the lessor and a less-than-stable flexible leasing company.

An article in last November's Law Society Gazette, which circulates among solicitors, warned lessees to ensure that minimum terms of replacement machine leases should be stated in the main body of the agreement, with the rate.

The article said that the lessee may be left in a difficult position, dependent on flexible leasing companies staying in business and honouring obligations. If a company should cease to trade, the lessee will be left with a long-term obligation on the original machine, the solicitor author of the article added.

Hunt is anxious to distance Computer Financing from such operations and engaged Max Cowper-Smith as his resident la-

wyer last July, a prime motive being to impress clients with Computer Financing's ultra-tight approach.

"Our job is to give the lessee enough manoeuvrability to get kit - at a price," he says, "I won't promise to do it without you (the lessee). But we endeavour to sell on or 'take your original machine and put money back to you."

Hunt stresses that in doing this there is only one lease agreement with its termination clause bedded in the main body.

Hunt says his leasing operation will really take off when the deliveries of his 12 model 3081s come through - at a total cost of £24 million.

"Having kept clear of the 3033, IBM are making it attractive to people to buy those. It's like repeating itself" - Hunt remarks that he can cash in on what he sees as a booming leasing market.

## What is IBM leasing?

FOR IBM computers, leasing works like this. A leasing company seeks out a user - a lessee - which needs an IBM machine. The lessee agrees to take one from the leasing company and to pay a monthly rental charge.

This is intended to cover the leasing company's payments to a bank for the money, for the machine, plus an extra margin of interest. The lessee pays, say, 10% interest.

The leasing company then goes to a bank and borrows the money for the machine at say 8% (an apparently low rate which will be explained in a moment). The 2% spread is the leasing company's profit.

The leasing company has to go to the bank because it does not have enough money to pay IBM for all the machines it wants to lease. It borrows the money from the bank.

The leasing company pays IBM



"Sorry - you can't use it yet we're still working out the leasing agreement!"

Because the leasing company has limited funds, it assigns the capital stream from the lessee to the bank. In fact, the bank discounts the rental stream over the period of the lease and gives the net present value (NPV) of that stream to the leasing company.

Why does the user go to the leasing company?

Because he does not want to buy

for the machine, but ownership of the computer (and this is the important point) passes to the bank for the remainder of the lease. The bank has become the lessor.

In practice, these operations take place simultaneously. The leasing company acts as intermediary between the bank (in fact, it may be a part of the bank) which has the money and the user which needs the machine.

In some cases the rental stream received from the lessee will not go on long enough to cover the whole cost of the computer. The shortfall is called the residual and needs to be found either through selling the machine on its return at the end of the lease or through another lease. Part of the leasing company's skill is to leave as low a residual as possible.

Why does the user go to the leasing company? Because he does not want to buy

(tying up his capital) or rent to IBM.

Why does the bank go to leasing?

Because it is a company with large profits and so is liable to taxes. If it buys capital goods it can offset their value against tax in its first year of purchase.

This is why it funds leases rather than hire-purchase agreements under leases ownership of equipment does not pass from bank to the leasing company, is why it is prepared to lend at well below market interest rates.

Since the allowance against profits for the first year, banks set up subsidiaries with financial ending on different dates throughout the year. In this way they can finance leases at any time of the year and take full advantage of tax allowances.

And why do leasing companies exist? Because they make money

## If it's a question of which terminal to choose, we'll give you The TOTAL Answer

It isn't just that we supply high quality terminals from leading manufacturers such as DEC, Hewlett-Packard, Tektronix, Diablo and Texas Instruments - there's much, much more.

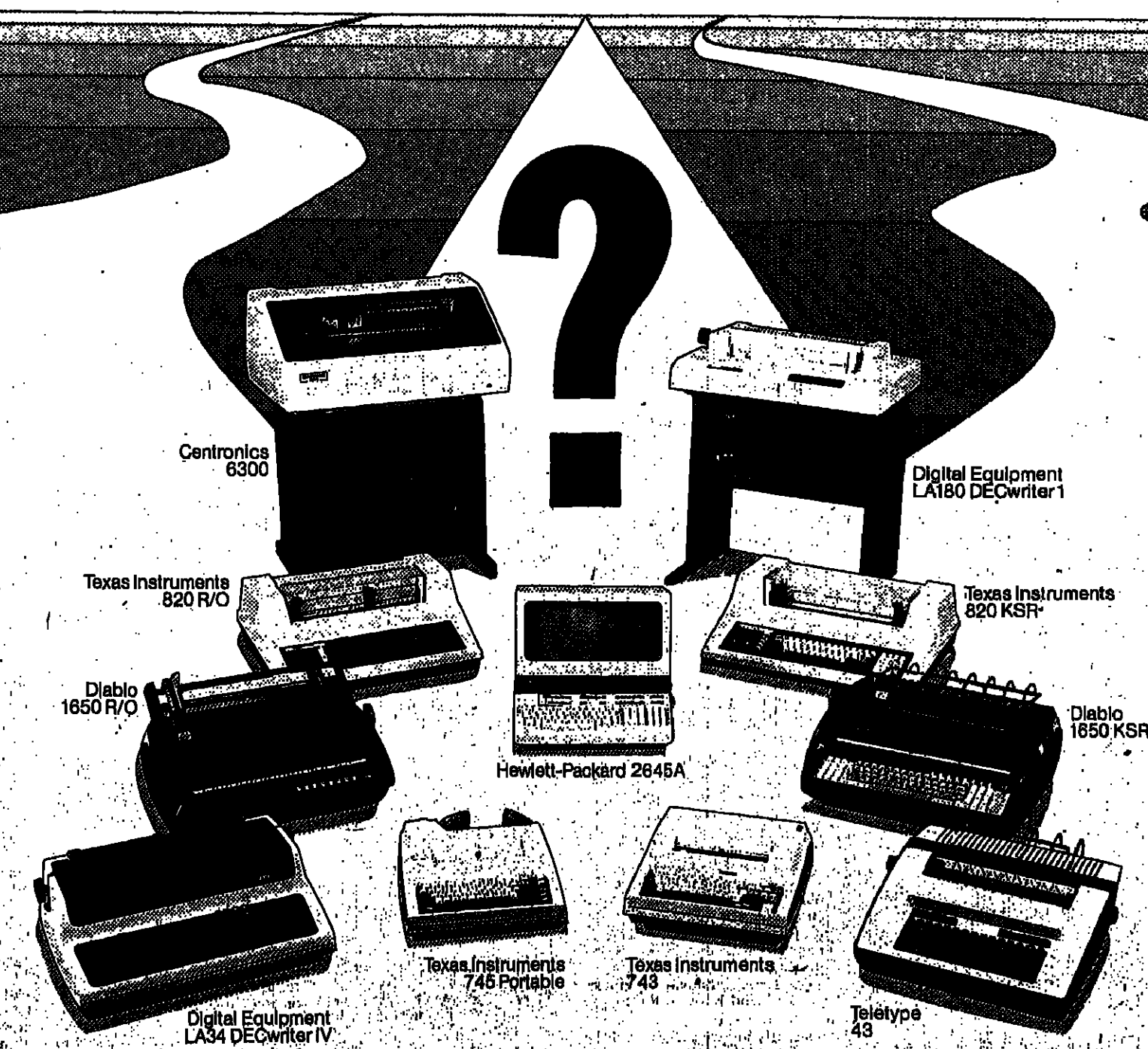
For a start we've got branches throughout the UK with full demonstration facilities and technical staff to advise on the most suitable terminal for your applications.

Next, we offer a very flexible rental scheme, with or without a Purchase Option, which includes on-site maintenance. This gives you the opportunity to evaluate equipment prior to purchase and upgrade any time without penalty.

Alternatively, if you decide to take advantage of our competitive sale prices, we'll give you a full 90 days warranty.

Finally, our Service Group provide Maintenance Agreements for all equipment in our range. These cover you for not only routine upkeep of equipment but act as an effective emergency service to minimise computer 'downtime'.

To find out more, contact your nearest branch today. If you've got any questions, one phone call could give you The TOTAL Answer.



## The TOTAL Answer HAMILTON

To: Technical Sales Division - Hamilton - Hamilton House  
North Circular Road London NW10 7UB

I am interested in the following terminals:

Name	
Company	
Position	
Address	
Telephone	

Hamilton Rentals Limited  
Hamilton House  
North Circular Road  
London NW10 7UB

London 01-661 6777  
Birmingham 021-236 3561  
Manchester 061-846 8336/8434  
Central Scotland 0501 43182  
Aberdeen 0224-25301

Paris Düsseldorf Toronto New York

## SWEEP RECEPTION AWAY!

CALL 01-602 4502  
COMPUTER BROKING SERVICES

Leading brokers in DEC® used computer systems, peripherals, modules & spares.

IBM 3033-U12  
AVAILABLE - NOW (NEW)

IBM 3158-K00  
AVAILABLE NOW

3033-U6  
MARCH '81

3148-K00  
FEB. '81

3031-4  
FEB. '81

4341-4  
FEB. '81

Telephone 0926 495291 CPS COMPUTER GROUP, BLACKFRIARS HOUSE, WARWICK

+ 3333 3340 3350 3380 3803  
+ 3330 3343 3370 3830 3420  
FROM CPS LEASING AND BROKERS











# Appointments

THE NEWSPAPER COMPUTER PEOPLE RELY ON

# Appointments

## COMPUTER WEEKLY

Classified Department, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Box Numbers: Should be addressed to the box number in the advertisement column of Computer Weekly at the above address.

Classified Rates: £19 per line (10 x 3 cols - 18/2, 39 x 3 cols - £14/2)  
Half Page (18 x 7 cols) £11/5  
30 x 4 cols £11/4  
Full Page (39 x 7 cols) £22/4

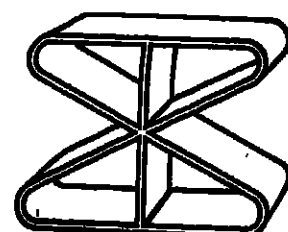
Copy Deadline: 3.30 pm Monday just before publication date. Complete at least 48 hours in advance. Advance space reservation is advisable.

LONDON 01-661 0121 (8 lines)  
Chris Paver Assistant Classified Manager  
Neil Walford Classified Supervisor  
Neil McChesney Consultancies  
John Hamblin Consultancies  
Lynne Smith General Appointments  
Gillian Johnson General Appointments  
Kevin McQueen General Appointments  
Peter Lloyd General Appointments

MANCHESTER 061 272 0051  
Gerald Adam 061 472 8861

BIRMINGHAM 021 356 4878  
Vic Street 021 356 4878

Classified Production 01-661 3500 Ext. 3104 Steve Paver



### Senior Analysts

Remuneration **c. £11K**

### Software Programmers

Remuneration **c. £11K**

### Senior Programmers

Remuneration **c. £10K**

Scandinavian Bank Limited was incorporated in London nearly 12 years ago, by an association of the leading banks in Scandinavia, and has since become firmly established as one of the City's major international merchant banks.

We are currently developing an advanced on-line banking system. Some projects are already live but, with our continued expansion, the development commitment is substantial. We currently operate a duplexed mainframe environment with an IBM 4341 and a 370/138, the latter to be replaced by a second 4341 in March. The TP network consists of Communication Controllers, VDUs and Remote Printers.

The following vacancies need to be filled.  
**Senior Analysts** Since you will be involved in the design of sophisticated on-line banking systems, several years' design experience in a banking environment is essential. Knowledge of IBM hardware and TP systems, though not essential, is preferred, as is the ability to work with a minimum of supervision.

**Software Programmers** You will have full responsibility for the generation and support of CICS/VSE. It is essential, therefore, that you have experience of at least one CICS generation. Knowledge of DOS/VS or DOS/VSE an added advantage.

**Senior Programmers** Several years' experience of COBOL in a DOS/VS environment with COMMAND level CICS essential. Knowledge of ASSEMBLER and/or RPGII an advantage.

Remuneration will be commensurate with experience and, in addition, the normal banking benefits are available. Apply in writing or telephone giving details of experience to: M. L. Mehta, Head of Data Processing, Scandinavian Bank Limited, 36 Leadenhall Street, London EC3A 1BH. Telephone: 01-481 0565.

**Scandinavian Bank Limited**

#### ROCHFORD DISTRICT COUNCIL

##### COMPUTER MANAGER

The Council has agreed to set up its own Computing Centre.

Applications are invited for the above post which is likely to command a salary of c. £13,000 + attractive benefits.

Applications are required by 6th February 1981. Further details obtainable from: Arthur G. Cooke, J.P.F.A., F.R.V.A., Chief Executive, Rochford District Council, South Street, Rochford, Essex S94 1BW. Tel: Southend 546366; Ext: 260.

#### UMIST

##### PROJECT OFFICER

UMIST is a leading University in the field of research and development in the chemical and pharmaceutical industries. It is currently seeking a Project Officer to manage the development of a new product. The successful candidate will be responsible for the overall management of the project, including the selection and supervision of staff, the procurement of materials and equipment, and the coordination of the project with other departments. The Project Officer will also be responsible for the preparation of reports and the presentation of the project to the University and to the public. The Project Officer will be based in the UMIST building in Manchester and will be required to work full-time. The salary for this position is £12,000 per annum. Applications should be sent to the UMIST Recruitment Officer, UMIST Building, Oxford Road, Manchester M13 9PL. Closing date: 28th February 1981.

## OPERATORS SAUDI ARABIA

Best paid world leader in engineering and construction, we are seeking the Royal Commission in Saudi Arabia. The project is developing a new oil field. We need experienced operators to run our oil rigs.

**ICL 2985 Operator £50,500**  
To operate ICL 2985 computers and related equipment. Applicants should be aged 25 or over, have a minimum of 5 years' experience and a good working knowledge of ICL 2985 operators.

**Shift Supervisor £23,000**  
To supervise the operation of ICL 2985 computers and related equipment. Applicants should be aged 25 or over, have a minimum of 5 years' experience and a good working knowledge of ICL 2985 operators.

**Jubail from Sand to City**  
To find out more, please contact: 01-741 7261 or send your cv to: Jubail from Sand to City, Jubail Industrial Estate, Jubail, Saudi Arabia. Tel: 01-741 7261.

### SHIFT LEADER c. £6000 p.a.

We are looking for a person in their late twenties who has a minimum of two years' experience as a Senior Operator or Shift Leader on a DOS/VS system. Our current system is IBM 4331 and we also operate an IBM 370.

Experience of VTAM, CICS and Q/S JCL will be preferred.

Shifts are of 12 hours' duration and 10 shifts are worked over a three week rotation. No allowances are paid and other benefits include a non-contributory pension scheme and monthly reviews.

If you are interested, please contact: Sue Ivan, Recruitment Advisor, Sun Life of Canada, 2-4, Conqueror Street, London, SW1V 5BH. Phone: 220 5400 Ext 223.

**Sun Life of Canada**

## MYRIAD

## IBM + DEC IN UXBRIDGE

### ANALYST/PROGRAMMER c.£9,000

To be involved with a range of commercial systems, this person will have the capacity to operate effectively as a senior programmer and/or systems analyst as he/she may well be asked to perform both these roles on different projects running concurrently. A clear understanding of COBOL is required and preference will be given to applicants with IBM experience.

### SYSTEMS ANALYST c.£9,000

The Systems Analyst will be responsible for identifying user opportunities, preparing business proposals, planning project requirements/resources and gaining user approval. During development, he/she will have regular contact with user management. A good knowledge of the Company's policies and a thorough understanding of systems interfaces will be maintained.

IBM mainframes and DEC equipment provide real-time processing and database facilities to a large number of users within this highly respected, international organisation that is renowned for the quality of its products. The Company is proud of its reputation as an employer offering a secure and positive future; a first-class pension scheme, staff restaurant, generous relocation expenses and many other staff benefits.

REF: S1/2201

### SEN. DATABASE PROGRAMMER

£ NEG.

The successful applicant will understand IMS and will have developed on-line systems in a commercial environment. He/she will join a small group currently investigating the areas in which IMS can be of most benefit and on-line facilities will be incorporated in many systems. Additionally, the Senior Programmer will design new systems and advise project teams on technical matters relating to IMS.

### DEC SYSTEMS PROGRAMMER c.£10,000

The recently installed PDP 11/70 (1 1/4 MEG) complements the IBM mainframes and will support twelve remote sites. We are seeking a person to refine and further develop the distributed processing network and require someone with software experience using BASIC +2 at an RSTS/E installation. RMS and FMS are highly desirable but applicants with a hardware and telecommunications background will be equally considered.

## ANALYST/PROGRAMMER

## BASIC OR PL/1

### HARROW

### MIDDLESEX

To £8,500 + BONUS

A range of new projects involving the use of real-time and database software and IBM 370, DEC PDP and Micro hardware has now been scheduled for development by our client.

A vacancy exists for an Analyst/Programmer with around two years' commercial BASIC or PL/1 programming experience to become responsible for one of these projects and liaise with the User through all phases of development. Candidates offering experience in one of these languages will be required to become proficient in the other.

The wide range of business activities will offer candidates an interesting career path in systems development.

Our client is a high successful commercial organisation and the starting salaries are further supported by an attractive package of benefits.

REF: NW1/2201

## MARKETING SYSTEMS

## CO-ORDINATOR

### CITY

To £8,500

+ PROFIT SHARE

This position presents an outstanding opportunity for an ambitious ANALYST/PROGRAMMER to take responsibility for the analysis and co-ordination of clients' systems requirements, identify areas of improvement and direct the implementation of recommended solutions.

If you can offer:

- ★ Good IBM COBOL
- ★ Some Analysis experience
- ★ Good communications skills

Then our client can offer:

- ★ Systems design, analysis and implementation
- ★ Client liaison and staff responsibility
- ★ Rapid career progression

Joining one of the world's leading business organisations you will be involved with a range of unusual and interesting marketing applications on behalf of clients whose business activities encompass a broad spectrum of industry.

An excellent commencing salary is further enhanced by a range of fringe benefits including a good pension scheme and substantial profit share together with a career path offering senior main-line managerial opportunities.

REF: E1/2201

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y 1AA Telephone 01-353 0981 24 hours



# Sometimes it's hard to tell the Goodies from the Baddies in this industry!

The Computer industry has more than its fair share of quick-quick cowboys. Outfits who are full of precious little talents. Software consultancies that promise you the cream of mind-stretching but send you on a series of mindless routine treks. Companies that are going nowhere fast.

The snag is, it's so often darned hard to tell the goodies from the baddies. So, in case you think this is another of those so called cowboy outfits, just follow our trail of success.

Space communications and \_\_\_\_\_ Branded 'TOP SECRET'  
Satellite tracking systems \_\_\_\_\_  
Complex transition conversions — Blue chip clients  
Hotel Management \_\_\_\_\_ Our own CHAMPS system

Systems design, real-time projects, feasibility studies, hardware/software evaluation — all undertaken by our posse of dedicated professionals. No wonder we have become one of the independent software houses in the country. This success has led to rapid expansion and growth. To meet these demands we require further top calibre personnel.

## WANTED

Senior Programmers  
Programmers & Analysts  
Minimum 2 years experience on;  
IBM OS or DOS (COBOL)  
Honeywell Level 6 (Screenwrite)  
ICL 2900 VME/B (COBOL)  
CICS or IMS database

## REWARDS

up to £12,000  
Equity sharing  
Life assurance  
Medical insurance  
Profit participation  
Career progression  
Job satisfaction

Any Voice and Data Communications Analysts should also join the Marcol posse and see why home spun philosophy has attracted the support and loyalty of the top trail-blazers. Isn't it time to hitch your wagon to a winner and join up with us?

Phone now or write to:  
Penny Bailey  
Marcol Computer Services Ltd  
60 Queens Gardens, London W2  
Tel: 01-402 9355 (24 hour service)

Computing  
Services  
Association

# MARCOL

Communication and Information





# Move into Software Development

## Salary to £12,000 per annum

Our Client is a major computer manufacturer in the process of further expanding its research and development facility in an attractive provincial location to the North of London.

Among the more important projects scheduled for development during 1981/2 is the design and implementation of a Data Dictionary package.

The ideal candidate will have around five years experience in commercial dp, having practical involvement in Database and possibly transaction processing systems. Experience within a database administration team would be an advantage as would an awareness of both structured design and programming and an interest in systems software.

Our Client's policy is one of maintaining close contact with the needs of the commercial User. It must be stressed that we are seeking someone with extensive commercial experience, probably a COBOL User, who has made a conscious decision to become more deeply involved in systems programming and is seeking a future in the development of software bearing relevance to the general needs of the User environment.

The attractive salary offered reflects the importance of the position within its development team and prospects for advancement exist for outstanding applicants.

Superb conditions of employment are available including free BUPA membership, a contributory pension scheme, a staff share purchase plan and a full relocation package.

To obtain further details, contact our Advising Consultant, Ian Payne on 021-236 3781 (24 hour answering service) or 0827 282480 (evenings and weekends).



Specialist Computer Recruitment Ltd

London 01-835 0671 3 Mandeville Place, Wigmors Street, London W1M 6LB  
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY  
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA  
Brussels 010 322-640 7161/71 Avenue Louise 327, Boite 4, 1050 Bruxelles



(4150)

## ABU DHABI NATIONAL OIL COMPANY

### OPPORTUNITIES FOR DATA PROCESSING PROFESSIONALS

Abu Dhabi National Oil Company, is one of the major national oil companies in the Middle East, controlling the exploration, production and distribution of oil, gas and associated products. Our Data Processing Services (DPS) Directorate has installed two large ICL 2900 Computers together with Network facilities to support the needs of more than ten Companies within the Group. DPS has developed/acquired computer systems for business applications in the areas of inventory, marketing, personnel, finance and order processing. For scientific applications, applications cover all the major areas of exploration, production, process engineering, and well history data base. Our plans are ambitious and our resources are impressive. We need to complement our existing D.P. Team with additional Computer Professionals who will be engaged in a wide range of activities.

#### WE OFFER:

- \* Involvement with the latest Hardware and Software Techniques.
- \* Attractive and competitive salaries and benefits.
- \* Furnished family accommodation.

#### WE REQUIRE:

- \* Relevant academic background and professional experience.
- \* Dedicated and result oriented people.

It is advantageous to have experience with:

- \* ICL equipment.
- \* ICL 2900 Software (VME/B) and products.
- \* Data base techniques (IDMS and DDS).
- \* Transaction processing.

#### SENIOR SYSTEM ANALYST:

The candidate should have a B.Sc. in Computer Science or equivalent with six years' experience in System Analysis.

#### SYSTEM ANALYST:

The candidate should have a B.Sc. in Computer Science or equivalent with four years' experience in Systems Analysis and Programming.

#### ANALYST/PROGRAMMER:

The candidate should have a B.Sc. in Computer Science or equivalent with three years' experience in Data Processing including one year in Systems Analysis. Good knowledge of Cobol.

#### PROGRAMMER:

The candidate should have a B.Sc. in Computer Science or equivalent with two years' experience in Programming and Data Processing. Good knowledge of Cobol.

Interested candidates are invited to forward their applications (together with photocopies of their education and experience certificates) within two weeks from the date hereof to:

PERSONNEL DIRECTORATE - (EMPLOYMENT DIVISION) - ABU DHABI NATIONAL OIL COMPANY - (ADNOC), P.O. BOX 666, ABU DHABI, U.A.E.

## Salesmen

### Mini Computer Systems

We are searching for young and successful entrepreneurial salesmen with experience of selling mini computer systems to commercial OEM outlets.

Our client, a very rapidly growing company with substantial backing from a major group, produces a range of computer peripherals based on DEC\* architecture. Working as part of a small team, the new salesmen will be expected to develop the high potential of the product range concentrating specifically on systems houses in market areas such as insurance, banking, inventory control and medical practices.

The person specification calls for someone who can open doors and make profitable sales as well as being an ambassador for a company with

a well known name.

We will, in particular, be looking for an understanding of both the Hardware and Software of DEC\* based systems. Candidates therefore must have a knowledge of either the RT11 or the CTS 300, 500 operating systems and be familiar with DIBOL and COBOL languages.

The location of this appointment is in Surrey and the remuneration package will consist of a good basic salary plus a realistic sales-related bonus, as well as a two litre car.

To apply, either phone for an application form or send a Curriculum Vitae to the address below. Please quote reference S/MC. These positions are open to both men and women.



\*Registered trade mark of Digital Equipment Corporation

### Cambridge Recruitment Consultants

1a Rose Crescent, Cambridge CB2 3LL. Telephone 0223 311316

(4130)

### Leicester Polytechnic

#### COMPUTER CENTRE

#### SYSTEM SUPPORT

#### PROJECT LEADER

#### (Systems)

£8235 - £9150

Opportunity for a suitably experienced applicant to take responsibility for a small team supporting system software on a Burroughs Large System.

#### USER SUPPORT

#### PROJECT LEADER

#### (Applications)

£8235 - £9150

Challenging posts for suitably experienced applicants capable of leading projects related either to faculty or administrative support.

Proposals are being formulated for new projects relating to a campus network and database implementation. The experience offered should prove rewarding to the right candidates.

Application forms and further particulars available from Staffing Officer, Leicester Polytechnic, P.O. Box 143, Leicester LE1 2BH. Tel (0533) 551551 Ext. 2303/1.

The above positions are open to men and women.

### Senior Analyst

Salary: £8,474 - £8,883 p.a.

The Authority is looking for an experienced Senior Analyst who has a relevant qualification of degree standard and preferably at least 3 years' experience in computer systems analysis.

Applications will also be considered from suitable people with less experience for appointment at the lower end of the pay range.

You will be helping to design systems to enable the Authority to carry out its functions covering the whole water cycle. You will be housed in a new purpose built computer centre situated at the Authority's head office near Warrington, with a dual I.C.L. 2972 computer supporting an extensive communications network to divisional offices.

There is an evergrowing demand for computer assistance and the development of this network and associated applications, using a variety of terminals, is under constant review.

Closing date for applications: 6th February 1981.

The above post is open to men and women.

Application forms available from the Director of Personnel & Management Services.

**North West Water** HEAD OFFICE  
Deans House, Great Sankey, Warrington WA9 3JW. Tel Penketh 4321 ext 3316 (4152)

**Athrofa Gogledd-dd Cymru**  
The North E Wales Institute of higher education

#### SCHOOL OF MATHEMATICS, STATISTICS AND COMPUTING

Kelsterton College  
Connaught Quay, Chwyd

#### PRINCIPAL LECTURER

#### COMPUTING

Applications are invited for the above vacancy. The work will include responsibility for developing a scheme for a range of studies in Data Processing at Degree Level.

#### LECTURER in COMPUTING

SALARY: £4683-£9065

Applications are invited from suitably qualified and experienced persons for the post of Lecturer in Computing. The successful applicant will be expected to contribute to the development of the well-equipped Microcomputer Centre.

Further details and application forms are available from the Institute Registrar, The College House, Kelsterton Road, Wrexham, Tel: 0930 61224. Closing date for receipt of applications: 1st February 1981.

#### BOX Nos

See number - details should be addressed to:

Box No. 1 Computer Centre  
Box No. 2 Human Resources  
Box No. 3 Computing Services  
Box No. 4 Data Processing  
Box No. 5 IT Services  
Box No. 6 IT Services  
Box No. 7 IT Services  
Box No. 8 IT Services  
Box No. 9 IT Services  
Box No. 10 IT Services

## Computer Engineers

### it's your future...talk to CAPP

<b>Negotiable</b>	IBM engineers with 370 experience required for London and Bristol areas.
<b>Salary</b>	DEC Engineers with PDP11 experience required for technical/project support in West London. Salaries exceptional.
<b>£8K+</b>	Field Engineers required for mini systems, London, South and Midlands. Previous mini/mainframe experience preferred.
<b>£7.5K+</b>	F/S Engineers + Technical Specialists to support message switching/multiplexing equipment. London, S.E. and Midlands. Previous Comma experience desirable.
<b>£6-8K+</b>	A leading mini manufacturer has vacancies for two F/S Engineers in C. London and two in West London. Applicants must have sound mini systems experience to component level.
<b>£7-8K+</b>	Engineers with a bias for software to work on plug compatible systems. Experience to component level on minis or mainframes essential. UK support based from Berkshire.
<b>£5-6K+</b>	Peripheral manufacturer has vacancies in UK and European support, based at Reading. Solid peripheral experience including hard discs essential.
<b>Save between £8-10K from your salary</b>	At present we have a number of clients in the Middle East who require experienced Engineers for lucrative contracts.
	Hardware: DEC, Systime, IBM, Olivetti + VRC and OCR equipment.

CAPP ASSOCIATES have provided opportunities for engineers over many years, and have developed a full and comprehensive picture of the engineering job market.

If you want to talk about what is available, or find out what you are really worth, telephone or write to Phil Chapman and establish how he can best help you.

**CAPP ASSOCIATES**  
01-688 9693

Capp House, 96 South End, Croydon CR9 3SD  
Computer and Professional Personnel Consultants

(4140)

## Senior Systems Analysts and Business Analysts.

Outstanding rewards and career prospects in sunny South Africa.

South Africa's largest publicly owned, fastest growing Life Assurance and Investment Group, with strong international associations, offers outstanding conditions for these new positions, based in Johannesburg.

- \* High salary; comprehensive fringe benefits including low initial mortgage and significantly lower cost of living.
- \* Paid air-fares, initial accommodation and generous relocation allowance for yourself and your family.
- \* You can choose a permanent position or four year renewable contract with very attractive conclusion arrangements.

#### Senior Systems Analysts (ref 66/22/CW)

To lead a team of up to 5 on the technological side of projects. Age 26-40, achievement oriented with management potential and 7+ years D.P. in Commerce/Finance.

#### Business Analysts (ref 66/22/CW)

To interface between DP and users in systems development. Proven DP/admin experience in finance/commerce essential. Life assurance experience and actuarial or accountancy background are advantageous. The company's advanced and constantly updated high technology environment includes two IBM 370/158's with a select systems development team of 40, working closely with top management converting to mv; installed Adabas DB System; building on-Line Real Time New Business Administration System; Branch sales support via "Silent 700" terminals.

Their continued success and rapid expansion in a prosperous country with a superb climate means that the opportunities for personal progress are exceptionally good, including the potential to move into management.

Our Client will be conducting final interviews in the UK during the first week in March.

Please telephone or write to Irving Gordon with personal and experience details quoting appropriate ref. no.

**IPG Technical Recruitment Ltd**  
4000 House 25-28 Old Ford Rd, London W14 6AL Tel 01-437 0212 (4 lines)  
Professionals in Selection & Search



(4134)



از ۱۳۰۰



**JBA****Consultants****London/Midlands****Neg. from £12,000**

This prestigious Consultancy Organisation is in the process of recruiting top class DP professionals to work on various commercial and production control projects. Candidates must be aged between 25-35. Ideally possess a degree or professional qualification and be used to working independently. They need to be individuals who have a thorough appreciation of both mini/mainframe equipment coupled with sound experience of systems design through to implementation. An excellent salary is supplemented by attractive fringe benefits (car, BUPA etc) and the opportunity to travel throughout the U.K.

**Contact: Isabel Bruce****Project Leader****Paris Suburbs****c. £160,000 FF**

We have been retained by a well established commercial organisation to recruit a Project Leader to take responsibility for the development of new mini/micro-based systems. Candidates, who should be French and have a good command of English, must be able to demonstrate several years of successful project management. The ability to motivate technical staff and deal effectively with user management is more important than deep computer knowledge. We are really looking for a mature individual with a good degree from a recognised French University and an outgoing personality to deal with staff at all levels. Excellent salary and career prospects.

**Contact: Jim Baker****Software Manager****London****£10,000**

This is a good opportunity to join a well established microcomputer manufacturer who cover a variety of end-users and OEM customers throughout the U.K. and overseas. Systems run on a version of the CP/M operating system, and support BASIC, FORTRAN and COBOL with a growing range of other system software. Applications are commercial, scientific and data communications. Background must consist of sound knowledge of hardware/software with emphasis on microcomputer software.

**Contact: Janet Chilvers****HP3000 Software Specialist****London****neg. to £10,000**

SCICON has an unsurpassed reputation for its technical ability and expertise in the development of advanced systems and software. To meet the demand for efficient and versatile systems they now require an experienced Hewlett Packard software technician to provide system support to the development teams. Responsibilities will also include the management of in-house machines. To qualify for this position candidates will have at least 2 years practical experience of HP3000 and have an in-depth knowledge of the internals of MPX, IMAGE and QUERY. An appreciation of the hardware structure and the ability to configure systems would be desirable assets.

An excellent opportunity to progress in a challenging and professional environment.  
**Contact: Margaret Stevens**

**Senior Programmer****City****£9,000 +**

Ideal opportunity to join a well established financial organisation who are in the process of installing two DEC 11/70's. To apply, it is essential to have at least two years experience in a DEC environment using BASIC, FORTRAN, COBOL, and PL/I. Also to have good knowledge of financial applications, plus the ability to deal with users and their problems. Promotion prospects are good as this is a new and developing installation.

**Contact: Janet Chilvers****Support Analyst/Programmers****Herts****c. £9,000 Package**

Due to internal promotions and steady expansion, our Client wishes to recruit experienced Analyst/Programmers on small systems, to undergo intensive product training and then head a project team. Working in the areas of complete turnkey systems, specific software packages and tailor made systems, you will be responsible for assessing client requirements, designing, amending and implementing the desired packages and taking charge of post sales support for your team. A strong commercial systems analysis and programming background on small business systems, plus the ability to co-ordinate and control a project. Some exposure to micro-based systems would be advantageous.

**Contact: Brian Postles****Programmers****Bucks****up to £9,000**

Our Client, an expanding systems consultancy are looking for a number of programmers to design and develop specialised software for turnkey and on-line projects. Applicants should have a minimum of one years RPG, COBOL or FORTRAN or any other standard high level language.

**Contact: David Hendry****Analyst/Programmer****South London****£8,250**

Our Client, a large international organisation who are component makers to the European industry are currently seeking a Analyst/Programmer to join their team and so have a requirement for an experienced Analyst/Programmer. Candidates should have a sound knowledge of FORTRAN with some exposure to ASSEMBLY, plus the ability to co-ordinate and control a project. Some exposure to micro-based systems would be an advantage.

**Contact: David Hendry**

**JAMES BAKER ASSOCIATES**  
International Personnel Consultants  
32 Savile Row, London W1  
Tel: 01-439 9311

**TECHNICAL MARKETING ANALYST**

**Circa £10,000 p.a.  
+ Company Car**

MODULAR COMPUTER SERVICES is a European leader in the supply of computer systems to the communications and industrial market places.

We are a young dynamic Company with a rapidly expanding marketing organisation and as part of this expansion we are looking for a TECHNICAL MARKETING ANALYST to join our existing team in our U.K. Headquarters in Coventry.

Suitable candidates will have a technical background on minis and will probably have held senior positions in projects implementing real-time systems in industrial or communications applications. The right person will be an enthusiastic committed individual capable of providing our sales force with comprehensive technical support. This role may suit a software specialist with both Assembler experience and proficiency in a high level technical language who is looking for the challenge of a demanding pre-sales environment.

This position carries attractive Company benefits including a non-contributory pension scheme, free life assurance and free BUPA.

For further details or an application form ring SUE HAMPSON on Wokingham 788711 or write to MODCOMP, Molly Millars Lane, Wokingham, Berks.

(4127)

**MODCOMP****SYSTEMS ANALYSTS**

**£6500 to  
£10500**

**PROGRAMMERS  
£5500 to  
£8500**

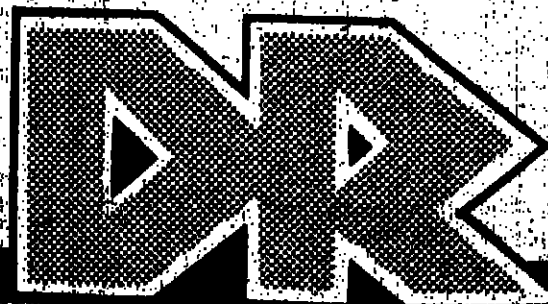
**Contact: North and Midlands  
CATHY SCOTT.**

**Telephone: 0423 55311**

**Contact: Scotland  
IRENE WEBSTER**

**Telephone: 041-226 4912**

*"We know where the good jobs are!"*

**DATA RESOURCES AGENCY**

P.O. Box 63, 8th Floor, Copthall Tower House, Harrogate HG1 1TS  
Tel: (0423) 55311/2  
Central Chambers, 11 Bothwell Street, Glasgow G2 6LY Tel: (041) 226 4912  
**(24 HOUR ANSWERING SERVICE 0423-55311/3)**

**OPPORTUNITIES—NORTH EAST ENGLAND****SYSTEMS PROGRAMMER**

**to £8500**

A major IBM user with an ambitious systems development plan wishes to recruit an additional Systems Programmer. The appointment is part of a small, but highly motivated technical support group who are responsible for all software support within the organisation. Experience is required of SOME of the following IBM software which is in use within the department:

• CICS • OS/VS1 • NCP  
• DL/1 • MVS • VTAM

The successful candidate would be offered a salary commensurate with his experience and our client will pay a full relocation package if appropriate.

To apply and find out more details contact Ivor Norton quoting reference CW/8102 at the Harrogate address.

**NETWORK SUPERVISOR**

**to £8500**

A large scale computer user, in the early stages of establishing a major nationwide network linking the data centre to Group subsidiary companies, wishes to recruit a Network Supervisor. This position carries the following responsibilities for the network:

• planning • equipment • costing  
• configuring • evaluation • general technical back-up  
• scheduling

Candidates must have an operations/hardware background. Previous experience in planning, establishing and supporting a significant network is essential for this key position. Excellent salary and comprehensive relocation package available to the successful candidate.

Interested? Contact Ivor Norton quoting reference CW/8101 at the Harrogate address.

**Ivor Norton Management Services Ltd**

RECRUITMENT CONSULTING DIVISION

**24 HOUR ANSWERING SERVICE  
(0423)55311**

LONDON  
52, Shaftesbury Avenue,  
London W1V 7DE  
01 734 8862

HARROGATE  
P.O. Box 63, Copthall Tower House,  
Harrogate HG1 1TS  
Harrogate 88628

GLASGOW  
11 Bothwell Street,  
Glasgow G2 6LY  
041 226 4911

**Somerset****COUNTY TREASURER'S DEPARTMENT  
COMPUTER AUDITOR****£8481-£9411**

The Council currently operates an ICL 2866 computer which will be replaced in September 1981 by an ICL 2868. A computer auditor is required following the advancement of the career of the present postholder. Applicants are required to have practical technical experience of computers including a knowledge of programming and systems analysis, must be able to communicate effectively with management at all levels and, ideally, would have an appreciation of accounting or audit disciplines.

The postholder is responsible to the Chief Internal Auditor and is expected to make a major contribution towards the efficiency and effectiveness of the Council's financial control systems including the physical and operational security of the computer installation; the appraisal and development of new applications and enhancements to existing applications; the confidentiality of data and the provision of an information service to assist the audit function in general.

The post is suitable for a computer specialist. Ideally, applicants should have financial experience.

Applications, stating age, experience, education, present employment and the names of two referees, to:  
County Treasurer (Ref. JS/RP), County Hall, Taunton

Prospective applicants wishing to discuss the post should ring Tony Parr on Taunton 73461, Ext. 638.

Closing date: January 30th, 1981

**BOX Nos.**

Box number (please specify) should be addressed to:

Box 63, Copthall Tower House,  
Harrogate HG1 1TS  
Tel: 0423 55311/2

**HEXAGON****PL/1 PROGRAMMERS**

C. London, S.E. and N.W. Home Counties.

**Mk. IV PROGRAMMERS**

Top rates in C. London and Kent. Indefinite Contracts.

**CICS/COBOL PROGRAMMERS**

Also Senior Programmer/Systems Designers, South, Central and W. London, Berkshire.

**BANKING ANALYSTS**

On-line real-time international applications.

**OS/COBOL PROGRAMMERS**

Opportunity to gain IMS Exp. on manufacturing or financial systems. Central and W. Home Counties.

**PDP RSX11 PROGRAMMERS**

Any high level language exp. Kent.

**HP COBOL PROGRAMMERS**

P.C. London and Beds. R/T airline system.

To discuss these and many other contract opportunities, please call any weekday up to 8 p.m.

**HEXAGON**  
Computer Services Ltd

Hexagon House, 100, Watlington Road, Watlington, Oxford OX1 1JL

**CONTRACT DIVISION****IMS COBOL PROGRAMMERS/  
SYSTEMS DESIGNERS**

C. London, Surrey and Kent.

**BUSINESS SYSTEMS ANALYSTS**

Product Order Costing System, W. London and Middx.

**UNIVAC 1100 EXEC 8**

Essex. All Commercial Applications.

**CONTROL PROGRAMMERS**

Central and North London. Prefer VSAM Exp.

**DOS/COBOL PROGRAMMERS**

To work on latest 8100 conversational systems.

**SNR. CICS/PL/1 PROGRAMMERS**

For 3/6 month London Contract.

**HONEYWELL LEVELS 6, 64, 66**

COBOL PROGRAMMERS

REDIFON EDITOR PROGS.

For 3/6 month London Contract.

**COMPUTER WEEKLY CLASSIFIED**

**DIRECT LINE 01-661 0121**

*the newspaper computer people rely on*

**DURHAM COUNTY COUNCIL  
DARLINGTON COLLEGE OF TECHNOLOGY**

PRINCIPAL: R. KELBY, MA(Dxon), MInstP., FRSA

REQUIRED ON 1st MAY OR AS SOON AS POSSIBLE THEREAFTER

**LECTURER GRADE I**

IN COMPUTING, to teach on DEC/TEC, NCC and GCE 'O' and 'A' LEVEL courses. Experience of computer operations systems and of operating procedures would be an advantage.

**SALARY SCALE: £4,888-25,695**

Application forms and further particulars (returnable by 20th Feb.) may be obtained from the Principal, College of Technology, Cleveland Avenue, Darlington DL3 7BS, on receipt of a stamped, addressed, foolscap envelope.

(4204)



**If you're on form...  
...fill in this one.**

If you're performing really well in your present job, you'll be keeping your eyes open for something better. But being a top performer, you've got better things to do with your time than pore over pages of job ads and make dozens of phone calls. So to save time, and to get yourself lined up for some of the best jobs going, just fill in our application form. We'll then get back to you fast with details of jobs that are exactly right for you.

**Personal** Please write in ballpoint, using block capitals. Surname \_\_\_\_\_ Forenames \_\_\_\_\_ Mr/Ms \_\_\_\_\_ Address \_\_\_\_\_ Tel. Home \_\_\_\_\_ Office (discretion will be used) \_\_\_\_\_ Age \_\_\_\_\_ Nationality \_\_\_\_\_ Car? \_\_\_\_\_ Are you prepared to relocate in UK? ☐ Abroad? ☐ (tick box)

**Experience** Place no. of years in box, e.g. IBM 360/370 ☐ 4

#### Machines:

Please specify model.

IBM 360/370 ☐

IBM others (specify) ☐

ICL 1900/2900 ☐

ICL others (specify) ☐

Honeywell ☐

Univac ☐

Burroughs ☐

PDP ☐

Other mainframes ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

#### Position Sought

Please state briefly the type of appointment you are seeking.

Contract ☐ Permanent ☐ Other ☐ (tick box)

Minimum salary ☐ Notice required/Date available ☐

Signed \_\_\_\_\_ Date \_\_\_\_\_

Our full advertisement and post to the address below:

**Knight**

**Knight Computer Services Ltd.**

**01-4914706**

**01-4914706**

**01-4914706**

**01-4914706**

**01-4914706**

**01-4914706**

**01-4914706**

**01-4914706**

**01-4914706**

**01-4914706**

**01-4914706**

**01-4914706**

**01-4914706**

**01-4914706**

**01-4914706**

**01-4914706**

## THORBAR

A DIVISION OF INBUCON MANAGEMENT CONSULTANTS LIMITED

### WEST MIDLANDS TECHNICAL CONSULTANT — CIRCA £7,000 PER ANNUM

#### OPPORTUNITY FOR YOU TO DEVELOP YOUR CAREER IN THE MINI/MICRO COMPUTER FIELD

Inbucon Management Consultants Ltd. are looking for a Technical Consultant to work on a wide variety of projects throughout the U.K. concerned with the design and implementation of Mini/Micro systems.

Ideally the successful candidate will be able to meet most of the following requirements:

1. Minimum of one year's programming experience (ideally BASIC) working with Micros and/or Minis.
2. Experience of working in a Manufacturing environment and some knowledge of Industrial Engineering.
3. An Engineering background, preferably supported by a degree.
4. Aged around 25/30 years.

Founded in 1928, Inbucon is a major International Consultancy employing over 700 Consultants and professional staff providing a comprehensive range of services to Industry, Commerce and Government. There are good opportunities for the right person for self-development and career progression in the Company's expanding Computer Consultancy and Advanced Technology Group.

**PLEASE CALL OR WRITE NOW  
FOR AN EARLY INTERVIEW  
ASSOCIATE DIRECTOR: JIM HEWARD**

**INBUCON MANAGEMENT CONSULTANTS LIMITED**  
48 Poplar Road, Solihull, West Midlands B91 3AG  
Telephone: 021-705 6414

**INBUCON**

Ref. CW/5/81

## SCHEDULER/ SENIOR OPERATOR

Our Head Office is based at Matlock on the fringe of the Peak District. The Computer Department is equipped with a large ICL 2904 installation operating under George 2+ and MTS.

Scheduling and ancillary functions constitute the major involvement, but operating and some staff training will also be a requirement. It is anticipated that candidates will need at least 4 years' relevant experience. This is a demanding position within a small but very active department.

The position offers an attractive salary together with excellent conditions of employment and working environment.

For an application form or further information please contact:

Miss C. M. Smithers, Personnel Assistant, Tarmac Roadstone (Northern) Limited, John Hadfield House, Dale Road, MATLOCK, Derby.

TELEPHONE: MATLOCK 3456 EXT. 355

**Tarmac  
ROADSTONE**

# MODUS

**International Personnel Consultants**  
Modus Management Services Limited  
148 Watling Street, Radlett, Herts. WD7 7JH  
Telephone: Radlett (09276) 3077

## WE NEED ANALYSTS!

Yes we need real Systems Analysts. People who excel at extracting information from a multitude of users, people who can gain the full confidence of user departments, including senior and operational staff, helping them find out what they want and helping them to decide what they really need. A military system background would help but is not a pre-requisite.

### £10,500-£13,500

Plus benefits package which includes: Bupa, free season ticket loan, relocation expenses, pensions, etc.

### Systems Concepts

Imagine the scope and freedom an Analyst really needs to do his or her job properly. The freedom to encourage users to give information without the restriction of a pre-conceived sizing of the machine or installation or system, the freedom to produce a totally comprehensive requirements specification, the scope that comes naturally from being there to analyse rather than impose a solution, the additional freedom that results from having a first-class team of software and communications designers to back you up. How often have you worked in conditions as ideal as these?

The task our client has set is as comprehensive as these parameters indicate. The decisions to be made from your work will identify not only the detailed aspects of the system design but also the benefits to be derived from a computerised solution, the costs such a project would incur and the time-scales for implementation.

What is certain is that the system will be multi-user and multi-locational and that the most up-to-date technology will have to be used. The overall objective is an extremely exacting one to achieve!

Interested? Your career may need the kind of boost that working on this system will give. The company you would be working for is recognised world-wide as one of the very best, as well as being one of the largest in the computer industry. Your security and professionalism cannot help but be enhanced.

Contact: Andy Wright or Mike Creamer

### Professional Background

Your experience to date must indicate sound, thorough Analysis — not just design and programming. Most people at this level will have taken responsibility for a substantial system development and we will expect to see some evidence of flair, imagination and self-reliance. A degree or equivalent professional qualification would be a considerable asset, whilst knowledge of such techniques as data analysis, extremely welcome.

In view of the growth factor and the way in which our clients assign staff to project work, there is no doubt that there will be progressively more room for extremely senior consultancy and project management positions as time passes. Additionally, our client's approach to project control and system design is entirely modern and exposure to these methodologies is certain to enhance and increase individual professional capabilities.

Opportunities exist within, or heading-up, the various design teams and the positions would suit applicants who are already at Senior Analyst level.

### IMMEDIATE SALES OPPORTUNITIES

with  
manufacturers of:

- Data collection and communications systems. O.Q.E. £18+ Mid and North.
- Minicomputers, major A/L Sales. O.Q.E. £17+ North.
- Minicomputer systems Area sales. £20k+ North and Midlands.

Contact immediately, quoting JVB/JB



**Insight Marketing  
and Personnel  
Consultants Ltd.**

Tel: 061  
236 7026

### PROGRAMMER? BECOME A TECHNICAL CONSULTANT LOOK WHAT IT TAKES!

THE PERSON 2-3 years' experience of commercial application programming in DEC BASIC + under RSTS/E and the ability to liaise with clients.  
THE JOB Converting functional systems design to computer systems design, implementing tailored made customer systems, and adapting standard packages to users requirements.  
THE REWARD A top salary, a swift and clear promotion path within a respected and established multi-million turnover group based in London but with provincial offices. Big company perks and travel and accommodation allowances when working away, plus many other benefits.

### COBOL PROGRAMMERS? PROGRESS NOW TO SENIOR PROGRAMMER

THE PERSON 3-5 years' experience of on-line IBM COBOL using VSAM and CICS; the ability to control a team of 3-4 programmers.  
THE JOB Developing a new on-line foreign exchange system for a major bank in the City. An understanding of COB and the ability to produce first-class program specifications essential.  
THE REWARD £10-11k per annum plus non-contributory pension, life insurance, BUPA, Beneficial mortgage scheme, L.V., bonus and recreational holiday and sporting facilities.

### YOU KNOW WHAT YOU ARE WE KNOW WHAT YOU CAN BECOME

If you feel you will be a suitable candidate for any of these opportunities, don't hesitate, contact Vantage Computer Services Ltd. (Ref. CW/5/81) and quote reference 11/10/120.



**Vantage Computer Services Ltd.**  
15 Roland Street, London W1V 8JL Telephone: 01-734 8729

### CALIFORNIA

For the start of '81 we at Independent Software Support can offer many medium- and long-term contracts in America.

### IBM

COBOL IMS CICS  
39 PROGRAMMERS  
With a minimum of 5 years' D.P. experience with 2-3 years' IMS.

### ARIZONA

HONEYWELL  
15 SYSTEMS PROGRAMMERS  
GCOS - GMAP Conversion

With minimum 4 years' GCOS experience.

\* All the positions carry high salaries and a full relocation package.

For more information please call in touch with Job at 155 on 01-437 4704 or write to Independent Software Support, 155 Old Street, London EC1A 3JA. Applications must be made by 15th February 1981.







## TWELVE EXCELLENT REASONS TO RING UCA NOW!

### ICL Operators

Surrey To £7,500 inc.  
If you are an ICL operator with 2 years + 1900 GIII or large 2800 VMEB experience, then ring us now for more details of this vacancy in a picturesque part of Surrey. There is a 3 shift system, and company benefits include CPs, subs, cant., 4 weeks' hols, and S&S club.  
CW 4/1 Simon

### Operators to Ops Supervisor

W. London To £9,500  
If you have 14 years + DOS/VS/POWER/CICS experience and are within reach of West London, ring us for more details of the above positions on the new IBM 3900 range. There is a two-shift system and no night.  
CW 4/2 Simon

### Contract Programmer/Analysts

IBM - 8100 3760 Prog. - Surrey - 3 mths.  
IBM - COBOL 4341 DOS/VSE CICS - London - 3 mths.  
IBM - SYS. 3 DOS/VSE COBOL RPGII - London - 3 mths.  
IBM 370 COBOL CICS VSAM DOS - London - 3 mths.  
Hwell - LBS TDS IDS COBOL - H'hire - 3 mths.  
T.I. - 990 COBOL T/term - London - 3 mths.  
Mini/Micro - Software experience - Austria - 1 year.  
Digital - Telephone Message Switching S/ware - France - 18 mths.  
PHONE: IRENE FOR DETAILS CW 4/3



Recruitment Consultants

UNIVERSAL COMPUTER ASSOCIATES LIMITED

01-995 3883 (01-958 6138 Evenings)

Data Express House, 3 Prospect Place, Heathfield Terrace, Chiswick W 4

(1144)

### IBM Systems Programmers

London & Home Counties £8,000 to £11,000  
I bet you never knew how popular you were? All you need to have is a technical IBM background with relevant IBM DOS/VSE or OS/VS1, VS2 or MVS experience to command a very good salary. We now have vacancies in: E. LONDON (1), HANTS (1), CROYDON (1), KENT (2), and the CITY (2). Remember that good applications programmers with the right interest in the systems side would be very welcome. Several companies offer excellent perks including relocation package, subsidised mortgage facilities, etc.  
CW 4/4 Tricia

### Senior Salesmen needed

London & Home Counties To £20,000 Q.E. + car  
An established market leader wishes to expand his existing Senior Salesmen to take charge of existing accounts whilst obtaining new business. A real chance to match your efforts with reward and managerial promotion after a reasonable period is well on the cards.  
CW 4/5 Michael

### Sales Support

London & Home Counties To £9,000 + car  
We have six MINI computer manufacturing companies with offices around the country who require people with the confidence to deal with clients in a pre- and post-sales situation. All vacancies require a programming background on minis and the jobs will provide an exciting and satisfying career. IBM or other mainframe experience is also an advantage.  
CW 4/6 Michael

### Cobol Programmers

Surrey £8,000 +  
A large well-known Utility in N. Surrey requires COBOL programmers (any machine) with 18 months' experience. Here is a chance to gain really first-class training in the very latest white hot IBM computer techniques and improve your career structure to end. Benefits include CPS, subs, canteen, bonus scheme and S&S club, etc.  
CW 4/7 Tricia

### Systems Analyst

City £9,000  
A major Telecommunications manufacturing and supply company using the very latest DEC and IBM installation has requirements for a DATA BASE systems analyst with IBM CICS or similar experience. Here is the opportunity to join the market leaders and benefit not only from an excellent career structure but top perks that include flexitime, LVs, relocation assistance, etc.  
CW 4/10 Tricia

### Senior Systems Analysts

Herts To £10,500  
This major consumer organisation has been in D.P. for the last 15 years and has developed a very sophisticated Database and Realtime computer network. Their next expansion phase demands two people to work in Stock control which is mini based and a financial online system using their Database. Promotional prospects look good and company perks are excellent.  
CW 4/11 Michael

### Project Leaders & Consultants

C. London £9,000 to £18,000  
Now is the time to get in on the ground floor of a large government contract (based around ICL 2900) that will extend your experience and provide a worthwhile step in your career development plans. As part of this international consultancy handling this contract you will be involved in a major project requiring the highest standards of professional skills. All those wanting more details please contact Michael.  
CW 4/12 Michael

### Analyst Programmer

Berks £9,000  
If European travel appeals to you, then this is the job you have been looking for. An electronics manufacturing company requires an Analyst Programmer with 4 years' COBOL/BASIC on-line systems experience. A Hewlett-Packard background is an advantage. There will be regular travel to European capitals. Excellent benefits include health scheme, CPS + Life Ass., BUPA discount, subs, rest, and 20 days' hols.  
CW 4/8 Tricia

### Analyst Programmers

Central London £8,000-£11,000  
A large international company in Central London requires Analyst Programmers with a minimum of two years' IBM COBOL CICS experience. A Hewlett-Packard background will also be considered for their on-line major application enhancement. This is an excellent firm with a first-rate career structure and perks that include flexitime, free lunches, non-CPS and 4 weeks' holidays.  
CW 4/9 Tricia

## World Leader (based in Thames Valley) Graphics Systems SALES EXECUTIVE to live in the West Country

**NEGOTIABLE PACKAGE includes: High Basic Salary  
+ CAR + BUPA  
+ LIFE ASSURANCE  
FULL TRAINING**

As part of their 1981 expansion plans, our Client wishes to recruit a Sales Executive with an above average technical bias.

As the acknowledged world leading Manufacturer of graphics systems they enjoy an envied reputation in the industry where their comprehensive product range is backed up by entire teams of hardware and software experts. In short; they make total graphics systems cared for by a second to none worldwide support network.

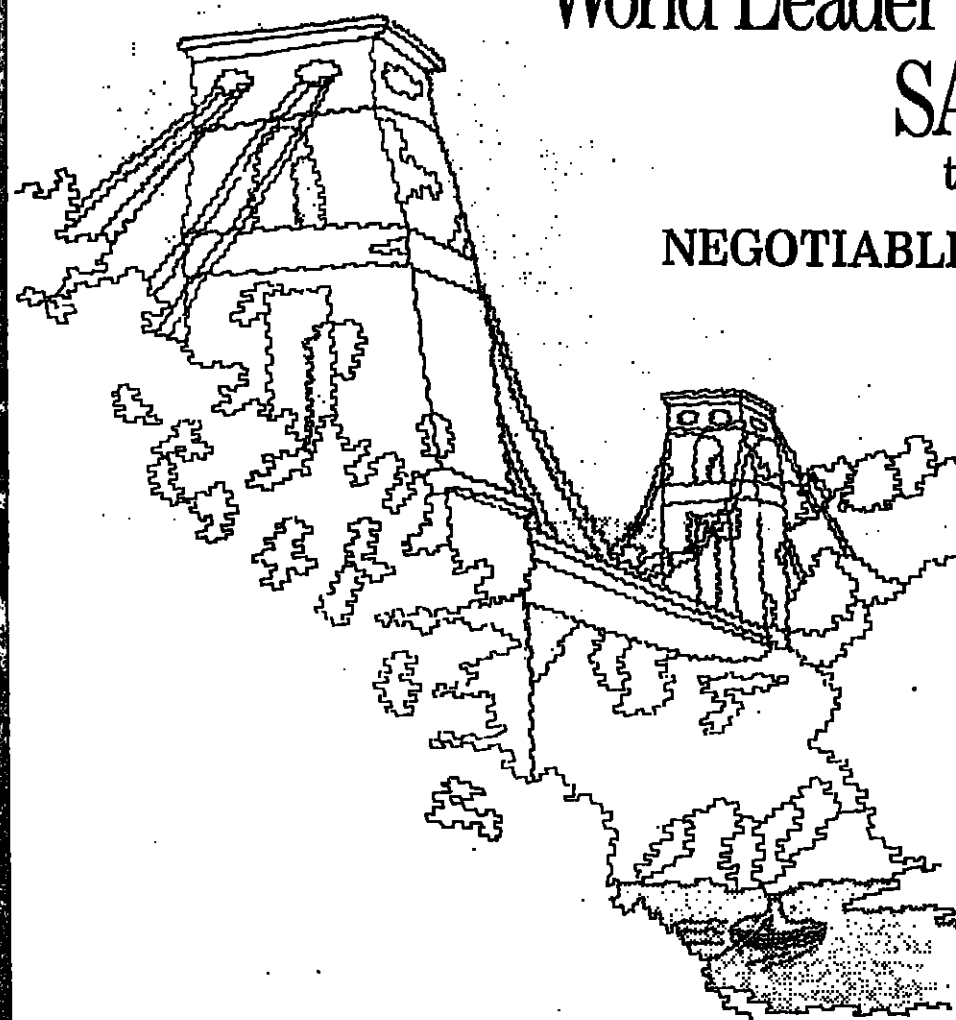
As Sales Executive you will cover the West of England and therefore work from home. Consequently self motivation is important as is the wish to grow yourself and the area. On that point the graphics industry is growing at a rate of 40%!

Apart from a good sales profile it is essential that you have the aptitude to negotiate to the point of sale in, for example, the scientific or engineering sectors.

Opportunities within the Company are genuine and could cover various areas of need. The Company offer structured training to arm you with the tools of success.

If you are looking for an exciting challenge with a world leader where your technical skills will be stretched, contact, SIMON LEVER, ON 021-236 3781 (24 hour answering service) OR 021-420 1574 (evenings & weekends).

If you prefer please send Curriculum Vitae to the Birmingham Office.



Specialist Computer Recruitment Ltd

London 01-935 0871 3 Mandeville Place, Wigmore Street, London W1M 5LB  
Birmingham 021-236 3781 36-37 Great Charles Street, Queensway, Birmingham B3 3JY  
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA  
Brussels 010 322-640 7161/71 Avenue Louise 327, Boite 4, 1050 Bruxelles

(1158)

Job no 1170

### SYSTEMS DESIGNERS

London & Bucks. To £15,000 plus car  
Our client, a processor in the Computer Services industry, seeks applicants with considerable experience in the design and implementation of computer systems, in particular on-line systems and preferably with a knowledge of ICL 2900 series computers.

### SENIOR CONSULTANTS

London Salary Negotiable  
Fast growing company in the Computer Services industry seeks Senior Consultants who have a wide computer applications experience and are able to deal with clients at all levels of management. Applications from candidates with previous management experience are of particular interest.

### SYSTEMS ANALYSTS

Bucks, London and Herts. To £13,500  
Several of our clients seek experienced analysts with some user definition experience and a background of advising the right information from a variety of people.

### DESIGNERS/IMPLEMENTORS

London To £13,500  
Our client, a processor in the Computer Services industry, seeks designers with a minimum of 3 years' post-graduate, on-line experience with large mainframes, preferably ICL 2900.

### PROGRAMMERS/PROGRAMMER ANALYSTS

London, Herts, Bucks, and Midd. To £11,500  
We would like to hear from candidates with good experience of the following languages: COBOL, PL/I, Fortran, BASIC, ALGOL, PASCAL, C, and others. We are also looking for candidates with experience in the design and implementation of computer systems, in particular on-line systems and preferably with a knowledge of ICL 2900 series computers.

### Executive Recruitment Services

Collins House,  
56 Wootton Drive,  
Hemel Hempstead, Herts, HP2 6LB  
Tel: Hemel Hempstead (0442) 42418

## TELECOMMUNICATIONS SPECIALIST TO £12,500 LONDON

Ref. CW/6/81

Our client is a prestigious international company with a medium-sized IBM installation in Central London. They are about to install a front-end processor and local communications network for on-line program development and for their first on-line applications system.

They wish to recruit a Telecommunications Specialist to design the network, plan its installation and acquire and install the necessary hardware. He/she will also provide an internal technical consultancy to Operations and Systems Development teams, for which a sound knowledge of the use of CICS teleprocessing software is essential.

You will probably have contributed to the installation of at least one network, must be familiar with the general hardware of on-line systems and have a knowledge of Post Office working methods. You must also have technical experience of the development of at least one on-line application using a proprietary teleprocessing monitor.

**THIS VACANCY REPRESENTS AN EXCELLENT GROUND FLOOR OPPORTUNITY AND OFFERS MANY BENEFITS INCLUDING PROFIT SHARE, LUNCHEON VOUCHERS, FREE TICKET LOAN.**

INBUCON CONSULTANTS LIMITED  
100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000



### TECHNICAL DIRECTOR

Southern Home Counties £17,000-£18,000  
To be in charge of all microprocessor based applications in a fully manufacturing company. Applicants must be from a manufacturing environment with about 10 years' experience covering mini- and microprocessor-based applications and have a good degree.

### PROJECT LEADERS ANALYSTS PROGRAMMERS

£8,000-£11,000  
For Research/Scientific systems group of large multinational company using IBM equipment. FORTRAN essential, experience on IBM and TSO Database an advantage. A-level standard of education.

### ANALYST/PROGRAMMER

Kent £7,000 +  
At least 2 to 3 years' experience of RPG II or RPG III essential for this position.

### PROGRAMMERS

SW1 £8,000-£10,000  
Software house requires COBOL Programmer of varying experience, from 2 years upwards.

### PROGRAMMERS

£7,500 +  
Surrey/Burrey/C. London  
Applicants for these posts must have experience of insurance systems using COBOL or BASIC. The posts (2) in Surrey require this experience as well.

### SCIENTIFIC ANALYSTS & PROGRAMMERS

£12,000-£15,000  
C. London  
Two companies require Analysts and Programmers (FORTRAN) for scientific/engineering applications on large IBM mainframe. Graduate preferred.

To apply for any of the above positions please telephone for an application form or write giving full details.



### SERVICE PROGRESS

#### LONDON - HOME COUNTIES

#### FIELD SYSTEMS ENGINEERS

£10,000 + O/T + CAR  
Growth of 100% per annum demonstrated the forward looking attitude of this major U.S. mini manufacturer. This growth has led to important vacancies within the service organisation. Product training in both U.S. and Europe and early promotion will boost your career if you can demonstrate computer experience and mature attitude to work.

#### SERVICE ENGINEERS

£7,500 + CAR + O/T + S/B + BUPA  
Our client, major U.S. mini manufacturer with over 20,000 installations worldwide, is offering exciting career opportunities in London/Home Counties to ambitious service engineers. Comprehensive product training on an extensive range of high performance systems will be offered to suitable young engineers seeking an opportunity to join one of the world's most respected manufacturers.

#### NEW COMPANY - NEW SERVICE DEPARTMENT

TO £9,000 + CAR + O/T + + + + +  
New company has introduced unique mini based system and is seeking three support/service engineers to set up a service facility from scratch. These positions offer real involvement and will appeal to enthusiastic engineers able to demonstrate initiative and computer experience. Call KEITH WALLIS for details on any of the above and many others at 01-843 1840 or 01-543 1885.

ALLTRONICS PEOPLE  
01-843 1840 (adv.)

(1088)

### ★ HONEYWELL PROGRAMMERS ★

Contract or permanent. Long-term assignments.  
Contact: Ken Grimalev on 0742 28838/25065

**Fraser Williams Computer Consultants**  
Fraser Williams Ltd.  
St. James House, Vicar Lane  
Sheffield

### PROGRAMMERS

CITY  
Must hold COBOL/PL/I experience. CICS an asset.  
To start Feb./March 1981.  
Please contact Daphne Jones

FORCE 8  
COMPUTER  
SERVICES  
8 Mint Walk, Croydon  
01-680 3761

### Nottinghamshire County Council

PLANNING & TRANSPORTATION  
ANALYST/PROGRAMMER

Required to be based at 1000 Bridge Road, Nottingham. Salary will be in the range £7,000-£8,000 per annum.

For further details please ring 0530 222222 or write to the above address.

### SNR ANALYST

Min. 8/8 years' exp. on IBM/HP/Burroughs

### SYSTEMS ANALYST

Min. 18 months' exp. on ICL equipment

### SYSTEMS PROGRAMMER

On IBM with CICS

### PROGRAMMER

Min. 18 months' exp. Cobol on small systems

Please write for further details/application form to:  
Howlett Computer Services, Office No 2  
29A High Street, Leighton Buzzard, Bedfordshire  
Telephone 0525 364735 or 0773 18 evenings/weekends

### S. HERTS



## SALES EXECUTIVE

London Area

c. £16,000+

Mouncey and Partners, one of the longest-established Consultancy Software Houses, are expanding their current sales team.

We are looking for a professional salesperson with the following qualifications to sell our various consultancy and development services.

- A proven sales record for several years
- Currently selling in the software/bureau industry
- Ideally selling in the London/Home Counties area
- Aged between 25-35 years with a positive and self-motivating attitude
- Enjoys selling and developing client relationships

Earnings will include a high salary and commission amounting to at least £16,000 p.a. on target sales, plus the following:

- Company car and expenses
- Normal benefits including pension, B.U.P.A., etc.

Interested? Then contact Alan Fenn on 01-486 7777 or write to him at



Mouncey & Partners Limited  
13/14 Cornwell Terrace  
Regent's Park  
London, N.W.1

## DALROTH computer and partners personnel

### COMMUNICATIONS

Major Real Time/On Line Projects  
London - Home Counties - Midlands

A leading International Consultancy Organisation currently wishes to recruit a large number of personnel for 4 major Real Time and On Line projects. Hardware includes large IBM, ICL and Honeywell mainframes, DEC, DG, Tandem, GEC minis plus various Micro Systems. Applications include Command and Control, Military Information Systems and a major commercial system with a large terminal network and Database facilities.

Project phases include Study, Definition, Design and subsequent stages through to operational running.

The following personnel are required:

	To c. £18,000 + Car
Project Managers	£13,000 - £15,000 + Car
Senior Consultants	£10,000 - £15,000 + Car
Systems Designers	£11,000 - £13,000
Consultants	£8,000 - £12,000
Systems Analysts	£9,500 - £12,000
Systems Programmers	£8,000 - £11,500
Programmers	

For all appointments, experience on large-scale communications oriented projects would be highly desirable, especially at the more senior levels. Specific areas of experience could include:

- \* Networks - Traffic - Work Load
- \* Message Switching - Interfacing
- \* Voice Networks - Electronic Mail
- \* Security & Access Control
- \* Military Command & Control
- \* Total Systems Design
- \* Database - Data Analysis
- \* Financial - Accounting - Auditing
- \* Control & Quality Assurance
- \* Large ICL/IBM or Mini/Micro

All appointments offer excellent long-term career prospects with opportunities for travel both in the UK and overseas. Attractive remuneration packages will be negotiated on an individual basis.

Urgent: MVS Systems Programmer for Germany to start 1/3/81 - £450+

For further details, please contact: Ian Murray West or Roger Allington on 01-486 2847 (office hours) or Milton Keynes (0908) 863415/Barnhamstead (04427) 2289 (evening/weekends).

Quote reference number 9841

DALROTH & PARTNERS LIMITED, 4 HALF MOON STREET, LONDON W1Y 7RA

# E.P.O.S. - the power to revolutionise retailing

Not since the advent of self-service has there been proposed such a major development in retailing philosophy as Electronic Point of Sale. It will provide on-line monitoring and recording of goods inward, customer checkouts, stock control, accounting, merchandising, staff training, in fact everything to increase the efficiency of our stores.

To start with, in the first year, 15 major Tesco stores will each be equipped with:

laser scanners  
micro-processor driven terminal registers  
terminal controllers  
linked to in-store IBM 8100's  
all linked to IBM mainframe at our Cheshunt Data Centre

Think about the career prospects of being one of the first to put in the groundwork on this exciting new project.

Tesco/EPOS could ultimately be the largest, most complex system of its kind in Europe. It will revolutionise both retailing practice and data processing techniques and your contribution to the team that sets it up and keeps it running could be vital... to EPOS and your future.

## Senior Programmers

up to £10,300 p.a.

## Data Base Analysts

up to £13,700 p.a.

## Systems Assurance Project Leader

up to £13,600 p.a.

## Senior Systems Analysts

up to £11,600 p.a.

## Systems Programmers

up to £13,700 p.a.

## Network Analysts

up to £11,700 p.a.

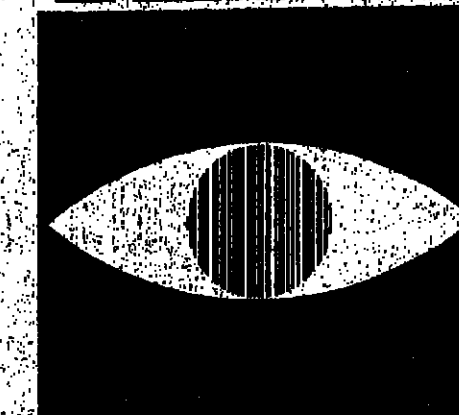
Salaries commensurate with experience

If you have experience with any of the following: IBM Cobol, Assembler, SPS2, PLDS, IMS, DPPX, TSO, SPX, MVS, NCF, MSP, DATAMANAGER, and are our sort of person, we can here and now offer you real career advancement.

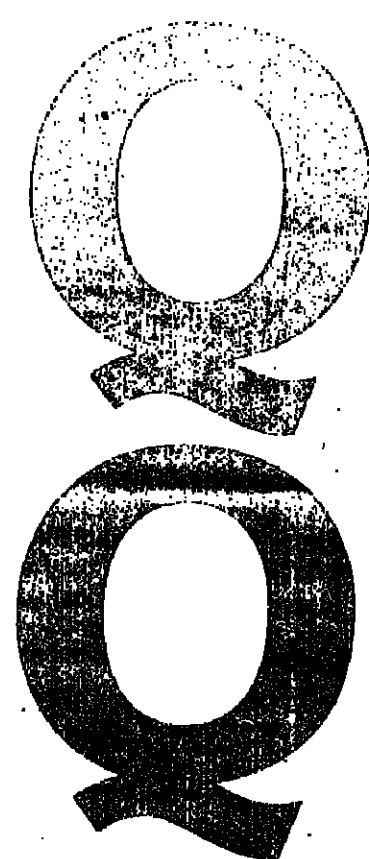
There's big-company prospects to go with big-company salaries plus contributory pension and private medical schemes. Other benefits include relocation expenses where appropriate, subsidised staff restaurant and an active sports and social club.

Take your first step right now, contact: Barry Howden, Personnel Department, Tesco Stores Limited, Tesco House, De La Mare Road, Cheshunt, Herts EN8 9SL. Tel: Waltham Cross 32222.

# TESCO



Putting EPOS into action.



A user dept with its own IBM 3033's?

And paying salaries up to £20,000 p.a. after tax?

The answers are definitely yes; and what's more, they will have their own purpose built computer centre ready for occupation towards the end of this year.

The machines will be dedicated to the Petroleum Exploration Division, which signifies the importance of this area of our client's activities.

As one of the largest companies in the world, you can be assured of excellent career and financial rewards.

During early 1981 we will be looking for the following:

**Systems Programmers**  
**Capacity Planners**  
**Data Base Specialists**

There will be many other job opportunities during 1981

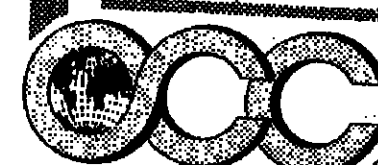
All people applying should possess a degree or similar qualification, have extensive experience of large IBM systems and be prepared to take up employment in Saudi Arabia.

The package could include:

- An attractive after-tax salary • Free medical care
- Substantial accommodation • Prospects of family status for the more senior positions.

Informal interviews are being held NOW and client interviews will take place at the end of February.

Your first step towards a brighter '81 is to contact Mike Mead at OCC Computer Personnel, 16 Bedford Row, London WC1R 4EB or telephone 01-242 9356.



**occ computer personnel**  
**01-242 9356** 24 hour answerservice

16 Bedford Row London WC1R 4EB. Telex 24224 ref. 1163  
Specialists since 1971 in UK and International computer and technical appointments.  
Please contact us for assistance and guidance with your next change.

(117)

## OPERATIONS CONTROLLER

- \* IBM 370 plus minis
- \* Full day to day responsibility
- \* Northampton based
- \* Salary to £7,000 p.a.

This is an excellent opportunity for an IBM operator to take the first step up the management ladder.

As Operations Controller you will supervise eight staff on our client's IBM 370/138 running under DOS/VS plus Varytek minis.

You should have in-depth operational experience on IBM hardware and you would be responsible for the efficient performance of all staff and equipment in the operations area. The ability to communicate effectively with user departments is also an important part of the job.

Full in-house training with the possibility of future advancement makes this a real career opportunity.

Our client is a wholly-owned subsidiary of an American company with a turnover of £40m per year. They have four UK sites with their headquarters all controlled from their pleasant Northampton headquarters.

They offer an attractive package including five weeks holiday, subsidised restaurant and relocation assistance as appropriate.

For more details call Steve Baker or write to him at:



Castle House, Park View Road  
Barnhamstead, Hants  
Phone: (04427) 24841

**WORD PROCESSING**  
Excellent Remuneration plus Car.

We require specialists in the London and Manchester areas with a minimum of 18 months computer experience, who have had involvement in or exposure to one or more of the following:

- TELECOMMUNICATIONS
- REAL TIME PROGRAMMING
- TERMINAL EMULATION PROGRAMMING
- MESSAGE SWITCHING
- WORD PROCESSING
- ELECTRONIC MAIL
- TIME SHARING SUPPORT

The successful applicants will be required to work in a support role which will involve pre and post sales customer involvement, internal communications programme installation, evaluation and enhancement. Ideally all applicants should have experience in word processing, but full training will be given in all the relevant areas. Proven experience in a customer support role will be a distinct advantage.

Reporting directly to the Communications Manager you will become an integral part of the communications team which has been created specifically to promote and support AES WORD PROCESSING in the fully integrated electronic office of tomorrow - today.

Other benefits include full working expenses, life insurance, four weeks annual holiday and associated public holidays.

Write or telephone for an application form to:

Mark Robson, Communications Manager, AES DATA (UK), Ltd.  
27/29 Fitzroy Street, London W1P 5AF  
01-637 8086

**COMPUTER WEEKLY CLASSIFIED**  
**DIRECT LINE 01-661 0121**  
the newspaper computer people rely on



## Analyst Programmer

### Process Control/ Data Acquisition

G. D. Searle is an international pharmaceutical company based in pleasant surroundings at High Wycombe in Buckinghamshire. A vacancy exists within our R & D Division Computing Department for an experienced analyst/programmer to join a newly formed small department which will be acquiring extensive new computing resources in 1981 to extend the existing PDP 11/40 and Hewlett Packard systems. The initial application will be to develop software for controlling and monitoring the processes in our new Biological Development Pilot Plant. Future applications will include the design and development of systems for data collection and analysis in a number of departments within the Research & Development Division. An extension into microprocessor based systems is envisaged.

We are seeking a person with a degree in science (or equivalent) and experience with real-time systems who has worked on process control applications and is familiar with DEC minicomputers.

Candidates, male or female, are invited to obtain application forms from

Miss D. Wardman  
Assistant Personnel Officer  
Searle Research & Development  
Lane End Road  
High Wycombe, Bucks.  
(Tel: High Wycombe 21124,  
ext. 3374).  
Please quote  
reference CFS

**SEARLE**

## COBOL PROGRAMMERS

£6-7000/depending on experience

### IN LINCOLNSHIRE

**The Company:**  
H. Leverton & Co. Ltd. holds the Caterpillar franchise for North East & South East England and operates from 8 locations. The Company sells and provides parts and service support to Caterpillar construction equipment, materials handling equipment, diesel engines and generator sets.

#### Operates:

4 MEGABYTE IBM 4341  
Extensive AP Network  
On Line Real Time Systems  
On Line Program Development

Major and Plans Developments to introduce more on line real time systems using fully integrated data base techniques.

#### The Position:

We are seeking to appoint commercial COBOL programmers to be based in Spalding, Lincolnshire, with 2-4 years' experience. Knowledge of CICS or IDMS would be an advantage. The company is a member of the Unilever Group which includes amongst other benefits 22 days' paid holiday and a contracted-out Pension Scheme.

If you are interested in being considered please apply in writing giving details of age, experience, qualifications and current salary to Mrs. D. M. Tutty, Personnel Department, H. Leverton & Co. Ltd., Westside Street, Spalding, Lincs.



© 1981 Leverton & Co. Ltd. Computer Caterpillar are trademarks of Caterpillar Inc.

(1180)

# Has the Milkman failed to deliver?

The milk rounds of Colleges and Universities can be quite a confusing affair. Carrots are dangled, promises made and images of bright futures projected onto unsuspecting minds. It's all too easy to make the wrong choice isn't it?

Do you feel that your career as a Programmer is moving in the wrong direction? Or is it not moving at all? Then consider the growth path we offer in R & D programming.

We are a thriving computer manufacturer with a modern, well equipped research and development centre located in the Northern Home Counties.

Our Company is all about success — and success breeds success.

Our hardware and software products are the most versatile and powerful of their type currently available. Our staff are young, and we actively encourage them to develop their own ideas by providing an ideal environment which fosters creativity.

Our Systems Programmers work in small teams, each member having access to a worldwide network of 66 computers through their own personal interactive terminals.

If you were allowed to develop your own concepts, would that give you the job satisfaction you are seeking? If so, we have a number of opportunities for bright young people with a desire to contribute to the further evolution of data processing techniques.

A degree is not absolutely essential, but you should have some practical experience of a structured language. Most of our work is carried out in PL/1, although if you have a knowledge of other high level languages such as PASCAL, ALGOL or CORAL, we will offer you the opportunity to exploit your interest in systems software.

There are a number of advanced areas in which you could find your initial involvement. These include:

- \*Communications
- \*Transaction Processing
- \*Data Dictionary
- \*Language Processors
- \*Network Management Systems

Promotion can be attained quickly, based on above average performance. Conditions of employment are excellent with starting salaries ranging up to £7,500 per annum, together with free BUPA membership, a contributory pension scheme, a staff share purchase plan and a full relocation package.

Interested? Then call our Advising Consultant, Ian Payne on 0921 236 3781 (24 hour answering service) or 0927 282430 (evenings and weekends). We look forward to meeting you.

## Specialist Computer Recruitment Ltd

London 01 435 8871 3 Mandeville Place, Wigmore Street, London W1M 5LS  
Birmingham 021 239 3781 36-37 Great Charles Street, Queensway, Birmingham B3 3JY  
Manchester 061 833 8427 Blackfriars House, The Pavement, Manchester M3 2JA  
Bristol 010 322 940 718/771 Avenue House 327, Bath 4, 10th Brunel

## Systems Programmers Grow with Mobil in the Garden of England

At Sevenoaks in Kent, Mobil Data Services have an international DP Centre providing a variety of computing services to some 22 Mobil Oil Corporation companies in the UK, Finland, Scandinavia and Benelux countries. Our current hardware consists of an IBM 3031 running under MVS/SE with communication links to Mobil refineries, blending plants, Marketing and North Sea operations. A network of IBM 8100 DDP Systems is currently being installed and a requirement for up to 8 such installations has been identified. To complement this network the central site machine capacity will be augmented by the installation of an 8 megabyte 4341-2 in December 1981.

If you're interested in getting to grips with the MVS and DDP this could be your chance. Company expansion has created several excellent opportunities for system programmers, men or women, seeking to broaden their skills and to grow with a major international organisation. The basic entry requirement is at least one year's system programming experience. At Sevenoaks you will be involved with MVS, Cullinane's IDMS Database, ALTERGO's SHADOW TP Monitor, TSO/SPR, NCP/TAM and a host of the latest software.

**Mobil**

(1188)

## Cuts corners

Even today, outstanding career openings exist in Computers & Telecommunications at all levels and throughout the UK. Here's the key:

## The Lansdowne

Appointments & Services

1. Obtain the key to the Lansdowne by completing the form below and returning it to the key service.

2. The key will be sent to you by post within 48 hours.

3. The key will be valid for 12 months.

4. The key will be valid for 12 months.

5. The key will be valid for 12 months.

6. The key will be valid for 12 months.

7. The key will be valid for 12 months.

8. The key will be valid for 12 months.

9. The key will be valid for 12 months.

10. The key will be valid for 12 months.

## ANALYST/ PROGRAMMERS

### Examine the career opportunities at Oxford Regional Health Authority

Several vacancies have arisen for Analyst/Programmers with at least two years' computing experience to come and join a friendly team of professionals working on a wide range of computer systems including PDP 11/70s, ICL 2900s and 2904s. Languages include PL/1, COBOL and FORTRAN.

The work is exceptionally interesting, offering a great deal of variety and challenge. Applications include on-line hospital laboratory and financial systems, as well as numerous other health care and medical systems.

We offer a salary on a scale ranging from £7,000 per annum for a newly qualified graduate to £12,000 per annum for an experienced professional.

For a worthwhile career with healthy prospects, apply to Mr. A. Williams or John Dunlop, Oxford 64881, ext. 688/889. If you prefer, write to an application form quoting Ref: 9/81-10.

The Recruitment Officer  
OXFORD REGIONAL HEALTH AUTHORITY  
100 High Street, Oxford OX2 7JL  
(Tel: Oxford 64881, ext. 367/368)

Closing date: 31/3/81

(1189)

## NEW ZEALAND GOVERNMENT Computer Services Division STATE SERVICES COMMISSION

The Computer Services Division of the New Zealand State Services Commission provides computer services and advice for the majority of New Zealand Government Departments. The Division is organised into a Head Office, four computer centres and a number of input centres.

**Head Office** — responsible for investigating departmental requirements, undertaking hardware and software evaluation, providing overall plans to co-ordinate and control future EDP requirements and advising Government.

**Cumberland Computer Centre, Wellington** — provides design programming and processing facilities relating to large financial insurance and statistical applications. The Centre operates twin IBM 370/168s in multi-processor mode running under MVS/JES2.

**Pipitea Computer Centre, Wellington** — provides services relating to tax collection, welfare payments and land valuation. The Centre is equipped with two Burroughs B4700, 500K Bytes and 39 H.P. 21Mx acting as concentrators.

Computer Services Division has a limited number of career positions available now at:

#### Head Office

### 1. SENIOR EDP CONSULTANTS/ EDP CONSULTANTS (Audit)

\$NZ14,314 to \$NZ25,186. Lengthy and varied EDP experience required, preferably in consulting or EDP Audit.

### 2. SENIOR EDP CONSULTANTS/EDP CONSULTANTS (Technical Services)

\$NZ14,314 to \$NZ25,186. Lengthy and varied EDP experience required, preferably in consulting.

### 3. EDP CONSULTANT (Hardware) (Technical Services)

\$NZ14,314 to \$NZ25,186. At least five years' experience in computer maintenance engineering with proven leadership/supervisory ability to lead a team of technicians on network maintenance and installation.

#### Cumberland Computer Centre

### 4. SYSTEMS PROGRAMMERS

\$NZ12,549 to \$NZ17,731. At least two years' proven general systems programming experience in large IBM environment required.

### 5. SYSTEMS ANALYST (Project Leader)

\$NZ13,443 to \$NZ19,950. Good all round EDP experience required with proven record in system design.

### 6. SYSTEMS ANALYSTS/SENIOR PROGRAMMERS/PROGRAMMERS

\$NZ11,429 to \$NZ19,950. Previous data processing experience required, preferably in a large system with database and telecommunications.

### 7. SENIOR COMPUTER OPERATORS

\$NZ18,914 to \$NZ18,023. At least five years' experience, specifically MVS/JES2, TSO, IMS/DC, network control, IBM job control languages.

**Trentham Computer Centre** — Located 20 miles north of Wellington in the City of Upper Hutt. Provides service relating to scientific and statistical work through a series of RJE terminals. The Centre is equipped with dual ICL 2980, 8 M Bytes and supports a large interactive and transactive processing network using IDMS X as a database.

**Wanganui Computer Centre** — Wanganui is a pleasantly situated provincial city on the West Coast of the North Island. The Centre is equipped with a UNIVAC 1110 3 x 2, 3.3 M Bytes equivalent computer which provides services for the law enforcement functions of the Department of Police, Justice and Transport.

#### Pipitea Computer Centre

### 8. ASSISTANT DATA BASE ADMINISTRATOR

\$NZ18,839 to \$NZ21,520. Sound programming background, some experience with Burroughs DMS II (applicant with Forte II or other database management system considered).

### 9. SYSTEMS ANALYST

\$NZ13,443 to \$NZ19,950. Five years' analyst experience required.

### 10. SENIOR OPERATORS

\$NZ18,914 to \$NZ18,023. At least four years' operating experience, on a Burroughs B4700 or relevant machine essential.

#### Trentham Computer Centre

### 11. SYSTEM CONSULTANTS

\$NZ22,477 to \$NZ25,186. Extensive knowledge in the investigation and development of VME/B operating system.

### 12. SENIOR SYSTEMS PROGRAMMERS

\$NZ18,839 to \$NZ21,520. At least two years' proven general systems programming experience in large ICL environment required.

#### Wanganui Computer Centre

### 13. SENIOR SYSTEMS PROGRAMMERS/ SYSTEMS PROGRAMMERS

\$NZ18,839 to \$NZ21,520. Minimum two years' experience on UNIVAC 1100 systems; assembler experience mandatory preferably in Exec 8 DMS 1100 or CMS.

### 14. SENIOR PROGRAMMER/ SENIOR PROGRAMMER (Training)

\$NZ17,731 to \$NZ19,950. Five years' experience required. UNIVAC systems with database preferred.

Assistance will be provided to staff recruited in the United Kingdom to move their family and effects to New Zealand.

The General Manager, Computer Services Division, Mr. R. Wheeler, will travel to London to conduct interviews.

For further information and application forms, please contact:

EDP Recruitment (2/338/10 CW), C/- Chief Migration Officer, New Zealand High Commission, New Zealand House, Haymarket, London SW1Y 4TQ (Telephone 01 930 6422 Ext. 384 or 432)

Closing Date: 20 February 1981

Job no 1-110



# REAL TIME SOFTWARE ENGINEERS

## Informal Interviews

on Thursday 29th JANUARY

5.30 pm — 9.00 pm

AT THE

### LADBROKE MERCURY HOTEL

BAGSHOT ROAD  
BRACKNELL, BERKS.

If you have had real time software programming or quality experience in Military, Industrial or Communication systems, we would like to talk to you about the development of System X and a range of other product developments.

Our client is currently building a Software Systems Team to:

- Conduct the integration and proving of the system.
- Produce the generic software package.
- Define and produce the mechanisms for loading the installation specific data.
- Define the 'manufacturing process' for generating the installation specific packages.

System X recognised as the largest computer based project in the UK, is one of the most advanced telecommunications system in the world, and will replace the complete communications network of the British Isles within the next two decades. System X will provide the advanced services essential for our own future networks as well as the export market.

The first installations in the System X family are currently being put into live service, and many more systems need to be developed to complete the whole range.

The system software team's responsibility is to produce a software package which will be able to be configured for all networks. The data describing a specific network will then be combined with this 'generic' suite to produce the software package for the installation.

These activities require an unusual combination of real time software ability and system awareness and represent a unique challenge to the software engineer.

Salaries and benefits, which include in house medical and dental facilities, relocation packages, pension schemes, on site sports and social clubs are excellent, with the prospects of progressive careers in an expanding and successful company at the forefront of technology.

Come along and have a drink and chat with our client, a major company on the South Herts border. Meet the specialists involved, discuss the technology and your future prospects.

If you are unable to attend don't hesitate to telephone or write.

**Carlton** PERSONNEL SERVICES

58 High Street, Biggleswade, Beds. Telephone: 316622 or Letchworth 3097 evenings and weekends.

### CISTERN ANALYSTS

Near LOOTON to £11,500  
Is your current job driving you round the BEND, feeling DRAINED, BOGGED down? Well get on the BALLCOCK — Analysts from a programming background can expect SEWER fire prospects. Become FLUSHED WITH SUCCESS. Please ring at your CONVENIENCE. (WC4U2P)

### COBOL

EC2 to £11.5K  
An ANGEL of a job now waiting for GOODge prog. with 2 years + exp. You can ILFORD to miss this appealing offer ACTON this and receive all the usual BANKing benefits. Maybe a WAP-PING great MANSION HOUSE. (PK1409)

### FORTRAN/COBOL

BERKS. to £8K  
DISC could be AERIAL GROOVE. Our client NEEDLES prog. with STYLUS. Fortran or Cobol. HoWOOFER for you look you'll have to go a LONG-WAVE to RECEIVE a TWEETER opportUNEity. (PK1219)

### PROGRAMMER

HERTS to £9K  
Don't be SHEEPish if your Cobol is good. 18 mths. experience WOOL give EWE a new STATION in life. The opportunity to be involved with analysis would be the next step for ambitious prog-GRAMMERS. (PK1302)

### SYSTEMS PROGRAMMER

CITY to £9,500  
The BALL's in your COURT. NET this ACE job by having 1-2 years' MVS or OS. ADVANTAGE Assembler, CICS, IDMS. If this is your GAME and you can MATCH it we can SET you on the right LINES. LOVE to hear from you. (NW1160)

### SYSTEMS PROG

W. COUNTRY to £10K  
ACNEcations please from anyBODY who NOSE CICS & MVS with an EYE to the future and the CHEEK to FACE and SHOULDER responsibility for the TEE-THING of an IBM 3031 maCHINe. (TH1325)

### SYSTEMS ANALYST

MIDD. to £10,500  
BOARD where you are? Then DART in on the DOUBLE to see us for this top-FLIGHT job. If you've seen at least one project through you'll have no TREBLE at this JCL site. For all the POINTS with no BULL get the LOWE-down from us. (NW1377)

### CHIEF PROG

MIDD. to £10K  
You can't afford to disCARD this, if you've 5 yrs. COBOL programming. On-line MINIS TRANSMITTING to mainframe IBM. Don't deLEYLAND. MAXimise your opportUNEities now. (NW1374)

### ANALYST

BERKS to £10K  
WHALE this apPIentment reads Financial and systems experience. PLAICE your project leader-like EFFISCENCY on the LINE at this IBM site and NET the benefits. SALMON MUST ACT APRAWN this and give us HER-RING without deELay. We're WHITING. (JS1387)

### PROG MANAGER

BUCKS to £9.5K  
TACKLE a SCRUMPTIOUS job. PUT-IN 2 yrs. supervisory experience. MANAGE and TRAIN a TEAM to PROG program standards. Don't FILL BACK, get in TOUCH with us. Once CONVERTED, you'll be glad you TRY'd. (JS1428)

### PROJECT LEADER

E. LONDON to £11K  
OMELETTEing you know, you SHELL SCRAMBLE to POACH this eggcellent position, not AFRIED to take over a team of 4/5 Analysts. Drive and supervisory exp. required for two large systems just coming up to the BOIL. (TH1386)

### SUPPORT ANALYST

WEAVE got a Software position TAILOR-made for you — SEW it would SEAM. If you're Support MATERIAL, you'll NEEDLE the Operating Systems exp you can COTTON onto. Device Handling exp would be SUITable. (TH1283)

**01-404.0152**  
COMPUTER SEARCH LIMITED  
South House 13 Southampton Place, London WC1

## COMPUTER WEEKLY

Two Software Reporters  
£7,750 and £6,375

tax-free reading allowance  
of £250 pa in each case  
(Salaries due for review on April 1)

Britain's biggest computer newspaper needs two specialists to strengthen its software coverage and write general news stories.

Applicants should either:  
have programming experience and be confident of their ability to write quickly and succinctly for an expert readership;  
or:  
have a background in journalism which allows them to report and analyse developments in the software industry, its products and languages.

One of the positions, depending on the candidate appointed, will take over a regular report written for programmers and concerned with all facets of their working life.  
Both will involve a wide variety of news reporting on developments within software and in the computer industry generally.

The two vacancies represent a major opportunity in computer journalism on the biggest and most-respected publication in the field. With a circulation of over 94,000, Computer Weekly is one of the leading titles of IPC Business Press, the world's largest publisher of specialist and trade journals.

The job is based at the company's new head quarters in Sutton, Surrey, and offers the usual large company benefits.

Write to the Editor explaining why you believe you have the skills for one of these openings and enclose a full cv and salary history. Mark the envelope 'confidential' and send to:

The Editor, Computer Weekly,  
IPC Business Press, Quadrant House,  
The Quadrant, Sutton, Surrey SM2 5AS

## OPPORTUNITY

Talented expert British team of real-time Data Switching hardware/software design specialists shortly available for challenging (and well paid) international assignments collectively or individually. Agencies may apply.

For details apply to CWT 806/1124

## IMMEDIATE CONTRACTS FOR PROGRAMMERS

IBM PL/1, MARK IV	JORDAN	£20,000 + A.A.
IBM S/VS 34	BARBARA SAUDI	+ accommodation & all expenses
RPG II	CRAYDON	NEB
DEC RSK11	CRAYDON	NEB
MACRO 11	CRAYDON	NEB
IBM S/VS DGS/VS		
Analyst (Banking applications)	LONDON	NEB
IBM S/VS DGS/VS PL/1	LONDON	NEB
Structural programming	LONDON	NEB

These are just a few of our current vacancies

For further details please contact:  
**NIC POLAND**  
**TYLIN PEOPLE**

A Division of Tylin Management Systems Limited  
Lea Road, High Street, Craydon, CR9 3NH  
01-880 2383

A member of the LATE & LYLE GROUP

Members of the Tylin Group

Computer Systems  
Software  
Consultants

## THE CHINESE UNIVERSITY OF HONG KONG

### LECTURER IN COMPUTER SCIENCE

(Re-advertise)

APPLICATIONS are invited for the above post tenable from August 1981. Applicants should have a higher degree (preferably a Ph.D.) in Computer Science or related fields with appropriate university teaching and/or research experience. Preference will be given to applicants with experience in one or more of the following fields: Data base management systems, Computer operating systems, System simulation and modelling, Statistical computing, Compiler design or Operational research.

ANNUAL SALARY: HK\$95,700-160,080. Exchange rate approximately £1 = HK\$12. Starting salary will depend on qualifications and experience.

BENEFITS include superannuation (University 15% appointee 5%), medical benefits, paid long leave, education allowance for children and for those employed on overseas terms, housing accommodation and air passage as well.

APPLICATION forms, and further information are obtainable from the Personnel Section, The Chinese University of Hong Kong, Shatin, New Territories, Hong Kong. Completed forms together with copies of recent testimonials and one set of major publications should be returned before February 28, 1981. Please mark 'Application' on cover.

## URGENTLY WANTED: EXPERIENCED INFORMATICS SYSTEMS SW PROGRAMMER

required: minimum 3 years of experience in compiler design and construction, Assembler and Pascal, creative and efficient programmer. Experience in DEC PDP-11 desired but not absolutely necessary. Longtime job with top remuneration. Apply to ALAN ABURN, Farnborough GU14 5AA, UK. Tel: 01-84 42 84. Ask for Mr. Macmillan.



## DHSS HYPERTENSION CARE COMPUTING PROJECT

This project, which is based at Northwick Park Hospital, processes clinical data about patients being treated for raised blood pressure in a number of hospital clinics and general practices around the country. The processing is at present in batch on an ICL 1900 but a new 6-year grant has been obtained from the DHSS to extend the system and move it to the new local DEC 2060, and to acquire remote intelligent RJE terminals.

The project grant supports four posts for computing professionals and three of these are at present vacant. Applicants should have a formal training in computing up to graduate level (or the equivalent length and breadth of experience). The length and type of post-graduate experience required varies with the different posts.

### Principal Analyst/Programmer

**£8,544 to £10,275 (NHS Scale 14)**

This post is for someone with considerable technical knowledge and experience and the ability to lead the small team. The appointee will help to choose the new equipment and to design and implement the new system. At least five years' post-graduate experience including file handling systems, programming in more than one language and supervising staff, is required. This appointment terminates with the current grant on May 31, 1985.

### Senior Analyst/Programmer

**£7,661 to £9,265 (NHS Scale 9)**

This post is for someone to retrieve and analyse data from the file and help with the new system. At least two years' post-graduate experience of systems analysis and programming, preferably within a team, is required. This appointment is for two years.

### Analyst/Programmer

**£6,839 to £8,221 (NHS Scale 4)**

This post is for someone to design and implement progress and will afford the opportunity for some experience of systems analysis and design. It is suitable for someone who has received appropriate training and wishes to develop their career by obtaining practical experience. This appointment is for two years.

Further particulars and application forms may be obtained from the District Personnel Department, Hammersmith Hospital, Du Cane Road, London, W.12. Telephone: 01-743 2030, extension 49. The closing date is February 9th, 1981.

## DEPUTY SHIFT LEADER

**£8,983 - £9,542 INCL**

This is what we expect to pay for a Deputy Shift Leader with the drive, enthusiasm and proven managerial experience to assist in the control of a shift of highly efficient operating staff. In addition a high degree of IBM technical knowledge of operating is required.

Our operating teams work to very high standards and you will be required to assist in the maintenance and enhancement of these in a dynamic environment.

Currently LOLA has a 6-megabyte IBM 370/158AP and a 4-megabyte Magnuson M80 (shortly to be upgraded), running under MVS JES2 supporting large IMS TP, TSO and APL networks.

Our requirements for this post are a minimum of 4 years' appropriate experience with at least 2 years in a senior supervisory capacity. Proven experience of controlling a TP network is essential.

Further details from Peter Anthony on Ext. 266.

Application forms can be obtained from:-

Mrs. Beryl Dorrington  
LOLA (London On-Line Local Authorities)  
FREEPOST, Tower Point North  
Sydney Road  
Enfield, Middx. EN2 8UE  
Tel: 01-368 6611 (Ext. 276)

**LOLA**

(4100)

# OVERSEAS VIA I.A.

**SYSTEMS PROGRAMMER** required to work on an IBM 4341 running under OS/VS1 using CICS, VST, VTAM etc. The work will involve general maintenance of the systems, housekeeping and file maintenance. Knowledge of the Dutch language advantageous. Location: The Netherlands

**ANALYST/PROGRAMMER** required to program in ASSEMBLER on MINI hardware. Work involves the development of scientific X-ray application systems. Location: The Netherlands

**SENIOR SYSTEMS ANALYST/PROGRAMMER** required with a good knowledge of DLI and COBOL. Hardware in use IBM 4341 running under DOS/VSE and CICS. Knowledge of the IBM package COPICS advantageous, not essential. Applications to be worked on include an on-line production/inventory control system and other materials management modules. Location: The Netherlands

**MINI/MICRO specialists** required to write USER REFERENCE MANUALS for a new range of MICRO's being developed. Location: Vienna

**SYSTEMS SOFTWARE ENGINEER** required with an in depth IBM UTILITIES knowledge to work on an IBM 4341 running under DOS/VSE using CICS, MVS, TSO, VTAM, MCP etc. Location: France, good knowledge of the French language essential

**SENIOR COBOL PROGRAMMER** with program design experience in business computer experience essential. Location: The Netherlands

**ANALYST PROGRAMMERS AND TEAM LEADERS** with excellent COBOL are required to work on the conversion of a number of systems to IBM hardware. Other D.P. languages required are RPG II, FORTRAN and ASSEMBLER. Applications range over scientific, engineering and petrochemical subjects. An in-depth knowledge of any of the following IBM UTILITIES will be advantageous: CMS, TSO, VSAM, VTAM and FOURMIST. Location: The Netherlands

**ANALYST PROGRAMMERS** with experience of REAL-TIME TELEPHONE SWITCHING software. Location: Paris

**TECHNICAL AUTHORS/TRANSLATORS** with a basic electronics knowledge and/or digital M.O.D. systems experience to write and translate documentation from French to English or German to English. Some wire-guided missile or optics experience preferable. Location: Paris

Outlined above is a selection of current requirements. Space and time make it impossible to list all the opportunities available. Therefore, if you would like to work overseas and for a highly-respected service company, please telephone or send your career resume to me because I may well already have an excellent opportunity to offer you.

**PLEASE WRITE OR TELEPHONE NOW**  
Ann Arledge, Marketing and Recruitment Director  
Industrial Artists Limited, 6 Banoroff, Hitchin, Herts.  
Tel: (0462) 57141 (Day) or (0462) 700701 (Even/Weekends)  
IA is a registered Employment Business licensed by D of E.



# Chief Programmer

**circa £10,000**

**N. Middlesex**

**IBM COBOL & Minicomputers**

We are the British subsidiary of a major American manufacturing company associated with the electronics industry. We operate an IBM 370/135 (DOS) and five mini-computers which are linked to provide on line and batch systems.

Due to internal promotion we are seeking a Chief Programmer to supervise a small team and to be responsible for all application programming on both the mainframe and minicomputers. Candidates should possess considerable IBM COBOL experience, preferably coupled with a working knowledge of mini-computers. Reporting to the Systems Manager, the position requires an enthusiastic supervisor who is also an effective working programmer able to assume a key role in a company which is heavily committed to D.P.

The successful candidate will be offered a salary, depending on relevant experience, of around £10,000 p.a. The Company also provides excellent working conditions, generous fringe benefits, and ample opportunities for career progression in a dynamic situation and congenial environment.

Please write or telephone with comprehensive details of experience and qualifications naming concerns to whom your application should not be forwarded to:  
Gordon F. Vivian,  
Managing Director  
(Ref: 541/CW)  
Hemmingway Recruitment Associates Limited,  
148 Fleet Street,  
London EC4A 3JP.  
Tel: 01-353 7661.

**HRA**

*Hemmingway Recruitment Associates Limited*  
London · Midlands · North

NEW ZEALAND  
UNIVERSITY OF  
CANTERBURY  
CHRISTCHURCH

## PROGRAMMER/ANALYST

Applications are invited for the above position in the Computer Centre.

Applicants should possess a suitable degree, preferably with Honours and practical experience in applied statistics would be an advantage. A high aptitude for, or proven ability in, computer programming is required.

The salary range for this appointment is NZ\$15,229 to NZ\$22,400 per annum.

Applications should be submitted, addressed to the undersigned, and arrive by 18 February 1981.

UNIVERSITY OF CANTERBURY  
PRIVATE BAG  
CHRISTCHURCH  
NEW ZEALAND  
W. HANSEN, REGISTRAR.

(4117)

QUEEN MARY COLLEGE  
University of London  
Faculty of Engineering  
COMPUTER ASSISTANT  
TEACHING UNIT

## GRADUATE RESEARCH ASSISTANT

required to develop and implement computer based teaching materials. A degree in engineering sciences or mathematics essential, with experience in computer programming, preferably in FORTRAN, and an interest in educational innovation. The appointment, which may be suitable for a new/recent graduate, will be for two years' initially. Salary scale (under review) £4700-£5950 p.a. plus 1981 London Allowance. Further details and application forms available from The Secretary (CIV), Queen Mary College, Mile End Road, London E1 4NS, to be returned by 18 February.

(4100)

St. Mary's Hospital  
Medical School  
(University of London)  
Norfolk Place  
London W2 1PG

## PROGRAMMER

required as soon as possible for BACTERIOLOGY DEPARTMENT. One year project to process analytical data for automated identification of bacteria. Degree in Statistics or Computing advantageous but not essential. Experience of statistics programming, use of Commodore PET and of statistical packages required. Salary within range £5,805-£8,245 + £367 p.a. London Allowance.

Further details from Dr. S. Bascomb or Mr. J. Thirwell. Apply: The Secretary, at address with full curriculum vitae and names and addresses of two referees not later than 8 February. Please quote Ref. 553P.

(4100)

Nelson Gordon's  
Institute of  
Technology/Aberdeen  
Computer Services Unit

## SYSTEMS PROGRAMMER

Required to maintain/develop systems software on DEC system - 20 multiprocessor computer. Applicants should have experience in systems programming with DEC 10/20 systems. Consideration may be given to recent graduates. Salary on a scale of £5,750 to £7,750 p.a. plus superannuation and pension. 24/7 duty on a 12/12 shift, on a 5/9/5 basis. 24/7 duty on a 12/12 shift, on a 5/9/5 basis. 24/7 duty on a 12/12 shift, on a 5/9/5 basis.

**ASSISTANT PROGRAMMER** Applicants must have formal academic qualifications, and preferably a minimum of 12 months' practical programming experience. Salary £3,472-£5,000 and from 24/7 duty on a 12/12 shift, on a 5/9/5 basis. 24/7 duty on a 12/12 shift, on a 5/9/5 basis. 24/7 duty on a 12/12 shift, on a 5/9/5 basis.

# Computer Professional Recruitment Consultancy

## R29 TELECOMMUNICATIONS?

TWO MARKET LEADERS NEEDED:

### SENIOR SYSTEMS SUPPORT - COMMUNICATIONS

HEREFORDSHIRE c. £10k plus bonus

Engineering service background advantageous. Experience in installation of modems/lines/terminals, telephones in computer environment, perhaps network control.

(4100)

R30

### SENIOR/JUNIOR SALES EXECUTIVES

2 BIRMINGHAM, 4 SOUTH-EAST, 4 MANCHESTER

From £6k to £8k base, £10k to £15k on quota plus car

Must be experienced salesmen with data comm knowledge. Engineering background useful.

(4100)

R31

### INTERNAL SALES (TRAINEE)

BIRMINGHAM Circa £5k

Trainees, could be direct from college with technical background. Good appearance, able to communicate and to progress to full sales role.

(4100)

R32

### AREA SALES ENGINEERS (TWO)

HEATFORDSHIRE/HEREFORDSHIRE/CAMBRIDGESHIRE

£7k to £7.5k - £14k on quota plus car

Experienced, successful salesmen only. Communications experience an advantage. Realistic quotas, commission accelerator thereafter. Also sales engineer setting to OEMs and System Houses working from Hampshire.

(4100)

R33

### SALES ENGINEERS

EAST MIDLANDS/LEICESTERSHIRE/BRISTOL/SURREY

SOUTH-WEST/BERKSHIRE/DEVON/MANCHESTER

£10k package plus car

22-23 years of age, computer science, O.N.C. graduates, with subsequent 1-2 years' industrial experience, not necessarily communications. Smart appearance, good communicators wanting well-paid sales career.

STOP PRESS  
MVS experts, big package, contact LONDON office immediately.

(4121)

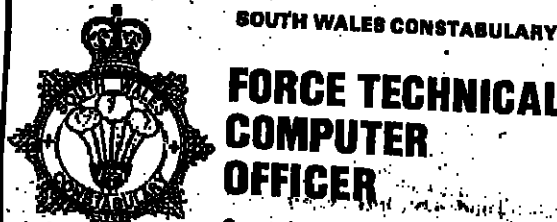
## ASSISTANT TO DP/WP CO-ORDINATOR

An expanding Lloyds Insurance Broker is seeking a person of 24/25 years of age to act as an assistant to their DP/WP Co-ordinator.

The applicant must have some IBM system 3/34 operational and programming experience. Also preferably some insurance knowledge.

Salary negotiable circa £7,000.  
Suitable applicant please contact:  
Mrs. S. Palmer on 01-481 3804

(4100)



SOUTH WALES CONSTABULARY

## FORCE TECHNICAL COMPUTER OFFICER

Second Advertisement

**£9,411 to £10,542**

(1st April 1981, £9,578-£10,731)

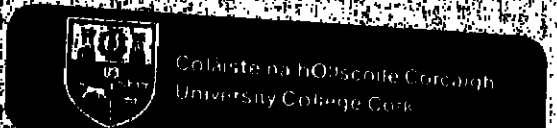
The South Wales Constabulary are seeking an experienced computer professional to fill the new post of Force Technical Computer Officer at Police Headquarters, Bridgend.

The Force Technical Computer Officer will assume control of hardware and software of a Honeywell Level 5 computer based Command and Control system utilising a dual processor system supporting sixty Visual Display Units and forty printers, for which a contract has been awarded. He/she will be expected to liaise with police officers at all levels and give technical advice on problems arising with the operation of all the computer equipment associated with the South Wales Constabulary.

Applicants should have a relevant degree or professional qualification and considerable experience of the design and programming of dedicated real time systems using mini computer hardware. The position is suitable for a person currently in a senior technical support position seeking wider managerial and technical responsibility.

Write or telephone for an application form, returnable by the 9th February, 1981, to The Chief Constable, South Wales Constabulary (Computer Project), Police Headquarters, Bridgend CF33 3BB. Telephone 0686 55515 (extension 381/382). Candidates who have already applied need not re-apply as their application will be considered after the revised closing date. Applicants with housing and relocation expenses will be available where appropriate.

(4100)



Coláiste na hOileáine Corcaigh

University College Cork

## STATUTORY LECTURESHIP IN COMPUTER SCIENCE

Applicants must hold a PhD in Computer Science or equivalent. The salary range is £10,000-£12,000 p.a. Application forms, together with details of the post, may be obtained from the undersigned. Details of the post may be obtained from the undersigned. Details of the post may be obtained from the undersigned.

Dr. J. J. O'Sullivan, Secretary  
Department of Computer Science  
University College Cork  
Cork, Ireland

## Contract Assignments Banking

Link Associates is a Software House seeking 3 Analysts and 5 Programmers to join Development Teams working for a major American Bank in London.

We can offer long, secure contracts in an interesting and well-disciplined technical environment. The installation is IBM 4341 under DOS/VS using PL/1, CICS and LIBRARIAN and the skills required are:

- |                                |                            |
|--------------------------------|----------------------------|
| <b>ANALYSTS</b>                | <b>PROGRAMMERS</b>         |
| ★ On-line Design               | ★ Minimum 2 years PL/1     |
| ★ Technical Bias               | ★ On-line Programming Aids |
| ★ Commercial Banking preferred | ★ Structured Techniques    |

DO NOT DELAY! Contact us now to arrange early interviews for contracts starting in February, March, April and May.

Please phone: Sheila Fox  
**LINK ASSOCIATED LIMITED**  
24a High Street, Chesham, Bucks. (02405) 4922



## BOX Nos.

Box number must be indicated by applicant.

## DO YOU UNDERSTAND COMPUTERS? CAN YOU SELL?

Are you a computer user? Do you understand computers? Can you sell? If so, we have a great opportunity for you. We are looking for people who can sell our computer products. If you are interested, please contact us.

## SYSTEMS ANALYST

**FINE ART AUCTIONEERS LONDON W.1. c.£9,500**

Our Client is the foremost firm of International Fine Art Auctioneers in the world with sales of £235 million. The continued growth and increasing sophistication of the business has created the need for further systems development and therefore the appointment of an additional Systems Analyst.

You will join a small but busy team developing integrated databases in a real-time environment on a Burrough's mainframe where you can expect to achieve a high level of job satisfaction and career advancement.

We expect you to have a COBOL programming background and at least two years' systems analysis experience which should include seeing a system through from start to implementation. Experience on Burrough's equipment would be an advantage but is by no means essential.

For further information on this exceptionally interesting position, please contact MARK IRENS quoting reference CW2201.

HUTTON EXECUTIVE SELECTION LTD  
HUTTON HOUSE  
HUTTON STREET, LONDON EC4A 3BP

TELEPHONE 01-353 7141 (24 HOURS)

**Hutton**  
SPECIALIST RECRUITMENT CONSULTANTS

# Targa

## CITY ANALYST (BANKING) c.£11,000

The London Branch of a major European bank is about to commence development of its banking systems and requires a SYSTEMS ANALYST to complement the existing team. The ideal applicant will have at least one year's experience as an Analyst and should have been involved in a project from feasibility to implementation. It is also essential that experience of FOREIGN EXCHANGE and REAL TIME systems forms part of the background. Excellent banking fringe benefits apply. Ref: R.3177.

## CITY RECRUITMENT CONSULTANT c.£10,000

Targa Computer Services which was established in 1978 is part of a group of companies serving the computer industry. We seek a CONSULTANT to expand activities within the more SENIOR range of applicants. Ideal candidates will be over 25 with experience of SYSTEMS ANALYSIS or PROGRAMMING and have the ability to assess people and communicate effectively at all levels, advising clients of salary levels, advertising and job specification. Generous basic salary, incentives and benefits are offered. Ref: R.3187.

## ESSEX (S.E.) CHIEF PROGRAMMER c.£11,000

A leading company in the leisure industry seeks a Chief Programmer to lead an existing team. Ideal candidates will be familiar with structured programming techniques and have the management skills to recruit, train and develop staff together with the ability to assist at the systems design stage. A COBOL background is essential and exposure to recent IBM hardware together with CICS a definite advantage. Benefits include relocation, bonus and flexitime. Ref: R.3184.

## CITY COBOL PROGRAMMERS c.£7,000

A leading City-based international company seeks COBOL programmers with upwards of two years' experience. Very bright young people with UNIVAC or IBM experience together with an exposure to on-line programme development, DATABASE and sales order processing would be particularly welcome to apply. This is a development opportunity in an expanding company offering excellent fringe benefits. Ref: R.3182.

## CITY PROGRAMMERS (BANKING) £7-10,000

We require programmers and SENIOR programmers for leading City-based European banks. AIMS experience is essential and demonstrable supervisory or management abilities will be required by the senior people. The usual fringe benefits will apply. Ref: R.3176/8.

## ESSEX ANALYST/PROGRAMMERS £7-10,000

Several Analyst/programmers are required to work in a recently installed UNIVAC 1100/61 installation. A COBOL background together with expertise in FILE-MAINT, UNITS and applications work on FINANCIAL or MANUFACTURING systems is required. There is also a requirement for an ANALYST with considerable DATABASE experience. Ref: R.3174/5.

## TARGA COMPUTER SERVICES

46/47 LONDON WALL

LONDON EC2M 5TE 01-638 6381



# MYRIAD

Outstanding opportunities exist for experienced Data Processing staff to play a significant part in the development of major international systems based on large IBM equipment. The company's European network links OSLO, STOCKHOLM, COPENHAGEN, VIENNA, MILAN, BRUSSELS, AMSTERDAM, PARIS, LONDON and currently vacancies exist in:

## ZURICH & DUSSELDORF

Joining specialist project teams, the successful candidates will be involved in the system design, specification and programming of several financial and marketing based applications making use of the European network.

### ANALYST/PROGRAMMERS... TO £16,000

- ★ 3 YEARS' D.P.
- ★ SOUND COBOL KNOWLEDGE
- ★ PREFERABLY IBM OS
- ★ USER LIAISON EXPERIENCE

- ★ RELOCATION ASSISTANCE
- ★ MODERN OFFICES
- ★ INTERNATIONAL SYSTEMS DEVELOPMENTS

The company is one of the world's most successful international organisations and offers a secure and progressive future to people appointed. The vacancies offer the opportunity to enjoy a high standard of living and considerable potential for personal career development.

Ref. N1/2201

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y 1AA Telephone 01-353 0981 24 hours



### (SENIOR) SYSTEMS PROGRAMMER £7000 - £10,500

Opportunities exist to join our newly formed team responsible for the installation, tuning and monitoring of system software. Scope is also likely to occur for a growing involvement in the field of capacity planning related to hardware, software, and user systems.

Applicants should have been engaged in DP for at least 2 years. Status and rewards will reflect the level of experience in systems programming and in particular with MVS, TSO and SMP. Knowledge of ACF/VTAM, IMS, VSPC and RACF would be an advantage although full training will be available.

COVENTRY CITY COUNCIL has recently created the Computing Services Unit with over 150 posts in its 6 Divisions to manage the newly installed IBM 3081 and the existing ICL system 4/72 and various Minis and Micros. The 3081 (4mb, 3810mb of 3350 discs) supports MVS and TSO with plans for VSPC and IMS, DC and ADF. It will be enhanced substantially over the next 4 years to meet considerable computing demands.

**SALARY AND CONDITIONS:** These posts are open to male and female applicants. We offer a salary negotiable within the range: quoted, career development largely dependent on ability, job security, excellent holiday entitlements and a relocation expenses scheme.

**WRITING TO:** Head of Computing Services, Coventry City Council, Council House, Coventry CV1 5RO.  
**OR KING:** Stan Heywood on Coventry (024) 3555. Extension 2227 for further details, an informal discussion, and an application form. Closing Date for Applications: 31 February 1981.

### IBM OPERATORS £5200 - £6700 (including shift allowance)

These posts offer the chance to operate the new IBM 3081 and the established ICL system 4/72. They also provide opportunities for involvement in all aspects of the Operations function including networking, JCL preparation and problem determination. Training will be provided wherever appropriate.

Current shift arrangements comprise 1 (IBM) and 3 (ICL), with plans for work transfer to enable these to be replaced by 2 (IBM) and 2 (ICL) by the end of 1981.

Applicants should have a minimum of 12 months experience, preferably on IBM equipment using MVS.

UNIVERSITY OF  
STRATHCLYDE

Applications are invited for the post of

### COMPUTER PROGRAMMER

in the MANAGEMENT SYSTEMS DIVISION of the UNIVERSITY ADMINISTRATION. The post will involve programming in COBOL for both new systems and the maintenance of existing systems. The University Administration operates a Honeywell 6840, 512K tape drive system which provides both batch and interactive processing services throughout the university. The appointment will be particularly suited to candidates with 2/3 years' programming experience and preferably with graduate or other qualifications in Computer Science.

The appointment will be made on the Senior Administrative Staff Scale Grade 1A (£4795-£5955 per annum under review) with placing according to qualifications and experience. USS benefit.

Application forms and further particulars (quoting 5/81) and enclosing a self-addressed envelope 8 1/2" x 4" may be obtained from the Academic Appointments Officer, University of Strathclyde, Royal College Building, 204 George Street, Glasgow G1 1XW, with whom applications should be lodged by 30 January 1981.

(4139)

QUEEN MARY COLLEGE  
University of London  
Faculty of Engineering  
COMPUTER ASSISTED  
TEACHING UNIT

### GRADUATE RESEARCH ASSISTANT

required to develop and implement computer based teaching materials. A degree in engineering science or mathematics essential, with experience in computer programming, preferably in FORTRAN, and an interest in educational innovation.

The appointment, which may be suitable for a new/recent graduate, will be for two years' initially. Salary scale (under review) £4795-£5955 p.a. plus £987 London Allowance. Further details and application forms available from The Secretary, (CWT), Queen Mary College, Mile End Road, London E1 4NS, to be returned by 18 February.

(4109)

ESSEX COUNTY COUNCIL  
SOUTHWOLD COLLEGE OF  
TECHNOLOGY  
Cameroon Road  
Southend-on-Sea  
Essex S82 6LJ

Telephone: 0702 353631

### LECTURER 1 - IN COMPUTING

This post is vacant from 1st May 1981 but applications from those unable to take up duty until a later date will be considered.

Candidates should have a degree or equivalent qualification in a relevant area. Ability to teach to G.C.E. 'A' level Computing essential.

Salary Scale: £4,885-£5,988 per annum (under review).

Further particulars and application forms from the Principal.

(4185)

## NEWBURY DISTRICT COUNCIL

### COMPUTER SECTION

We are installing one of the new range high performance and multi-purpose I.C.L. ME29/35 computers which will involve the transfer of systems from our existing 2803/35 R.J.E. device linked to Berkshire County Council. To ensure maximum gain is obtained from our computer resources we have planned an interesting and varied development programme.

We are looking for:

### PROGRAMMERS

28,057 - £7,353

The postholders will be required to have a detailed knowledge of COBOL programming and will join a small team involved initially in the transfer of systems to the ME29, and play an important part in the overall development of the computer service.

WE OFFER:

- A generous relocation scheme, including legal/estate agent fees to a maximum of £1,150, 100% removal expenses, disturbance allowance of £200, temporary/permanent housing accommodation, temporary subsistence allowance, bridging loan facilities, centre and recreation facilities, a pension/retirement scheme and excellent working conditions.

For further information and application forms contact: Personnel and Management Services Unit, Council Offices, Chesel Street, Newbury, Berkshire.

Tel: Newbury (0338) 42400, Ext. 385

CLOSING DATE FOR RECEIPT OF APPLICATION FORMS: First Monday, 31st February 1981

## SMR

Sales & Marketing Recruiters Ltd  
Victory House, 99 Regent Street, London W1R 7HB  
A Sales and Marketing Services Company  
London & Midlands

## Sales Executives

—with a talent for management  
Advance your career into large-scale mainframes

Our client is one of the world's foremost suppliers of mainframe computers; one of those names that gives real credibility to your curriculum vitae. This company has the qualities that well-informed, ambitious sales executives instinctively look for when seeking a career opportunity. Unquestionable market stature and product credibility, substantial and continuing investment in research and development, ongoing sales and product training (in the USA as well as the UK!), positive opportunities for personal advancement and above all real commitment to the well-being of its employees and its clients.

We are seeking top-flight, proven senior sales executives, with at least three years experience of selling hardware based computer systems to major companies and institutions, for account management and high level sales negotiations, related to large-scale mainframe computer users. Job responsibilities will initially involve the protection, expansion and overall development of substantial existing installations, but new account selling will play an increasingly important role. These activities will demand the talent to develop and implement complex sales strategies at all levels of business operation.

The jobs are based in

London

and on-target income is likely to be in excess of

£18,000 + company car

A minimum income guarantee will be negotiable for the first 12 months of employment.  
Please provide complete career details to Alan Williams or Alasdair Scott quoting reference RBC/101.

Tel: 01-734 9776

Midlands and North - Lichfield (0543) 516672  
Answering Service after 6 pm and weekends  
SALES TRAINING, MARKET RESEARCH, RECRUITMENT

Ferranti Computer Systems Ltd.

## Field Sales

PT7 Programmable Terminals are Advanced Alternatives to ICL 7502 and IBM 3270.

PT7 Programmable Terminals offer valuable additional facilities for the data processing manager, and the terminal user alike.

PT7 Programmable Terminals offer the financial controller better price/performance ratios.

PT7 Programmable Terminals are already well established and, with several new product releases recently announced, are set to penetrate still further the terminal systems market.

PT7 Programmable Terminals selling at customer level is backed by a major advertising and exhibition campaign.

Ferranti Computer Systems is recruiting experienced Sales Personnel to cover the South of England, and persons with relevant experience in selling interactive terminals for connection to ICL and IBM computers are invited to apply for these rewarding positions.

Successful applicants will be paid an attractive salary, a company car is provided, there is a bonus scheme and the usual fringe benefits of a progressive company.

Apply in writing to Mark Freeman, Ferranti Computer Systems Ltd, Simonsway, Wythenshawe, Manchester M22 5LA.

quoting reference 90/W/15/CW or telephone 061-499 3355 Extension 223 or after working hours 061-486 2540.

FERRANTI  
Selling technology

## THE SALES BIT

### Common causes of failure in sales recruitment

LAST week I wrote about the common occurrence of sales recruitment failure, due primarily to a lack of urgency at branch sales management level. Of course, there are many other reasons why good candidates are lost; also a number of ways to raise the level of success.

While indecent haste is clearly to be avoided, there is no doubt that beyond an arbitrary point of two to three weeks' duration, the chances of recruiting a good candidate decline at an exponential rate. In most cases the problem is a matter of priorities. Sales managers can easily delude themselves into believing that recruitment must have a lesser priority than sales activity, a common administrative process. This may be true for a while, but the price of delaying recruitment soon becomes very high; particularly in the form of new business sales.

Unrealistic requirements and procrastination are also significant causes of delay in the recruitment process. Peter Jones, of Tynshere, sometimes refers to a recruitment situation he calls the George Best syndrome. This is where a sales manager, rather than observing the realities of what is available, the price he can afford and the attractions of his company relative to those of other competing employers, looks for a "star" who is prepared to transfer for average rewards and solve all the selling problems.

#### Preparation

Another reason for the failure of sales recruitment is the nature of the interview. Candidates often complain of unsatisfactory meetings, lacking in preparation and devoid of job specification or territory definition. This kind of situation can only serve to degrade both the manager and the job.

It is essential that all interviewers are prepared and have a planned structure to cover all aspects of the job situation. They should also be backed by promotional literature. After all, the job interview is just another sales situation, but one where both are selling and both are buying. Trial closes and final closes are very much part of the action, if the deal feels right, ask for the order!

#### Indecision

When he eventually realises how unrealistic his stance is, that such people are at a premium and typically cannot afford to leave their present source of high reward, and have better options if they did, he begins to modify his position. This often develops into a period of indecision about the kind of secondary alternative that is acceptable. Eventually he gets into the unrecoverable position of being unable to compensate for the revenue lost brought about by an unwanted territory. It is then likely that the next job vacancy he has is his own.

The best kind of respondents to recruitment advertising are often those who have not definitely decided to change their employment. Their attention was caught by an advertisement and they decided, perhaps on impulse, to discover more about the job in question. However, once they have attended an interview and discovered they are a commodity in demand, they can quickly get into the mood for changing jobs.

Any gap in the proceedings provides both the opportunity and incentive to seek alternatives.

#### Lost impetus

I have often seen the situation where candidates without any other job in mind have applied for a job, following an advertisement, and by the time they are invited to the third or fourth interview have managed to obtain firm offers of employment from competitive companies or even started a new job! Ridiculous, but true and recurrent.

Loss of impetus usually means loss of best applicants. Clearly, the number of interviews between the initial

#### Wasted

A lot of time can be wasted on inadequate or unsuitable people; whereas a campaign measured to the employer's precise requirements can include those actively seeking further employment, and job-hunters are not actually successful salesmen; it is unlikely to be actively involved in the job market.

One final point to sales managers who find it difficult to make time for recruitment interviews. There's always plenty of time before 9 am and after 5.30 pm. Many hardworking candidates would actually prefer it.

#### TRADER

### Puzzle Answer

THE sequence has been made up by expressing 10 in descending bases, starting with 10 in base 10, the next number is 1,000 (base 2).



## CONTRACTS

C. £325 to  
£900 p.w.k.

IMMEDIATE to  
APRIL start

Midlands/H.C.	PDP11 RFXIM MACRO II	Programmers
London/Midlands	M 6800 or INTEL 8086	Programmers
London/H.C.	VAX or PDP11 RTL/2	Designers/Programmers
U.K.	IMS or DL/1 VSAM	Database Designers
U.K.	FINANCIAL	Analysts
U.K.	IMS DB/DC PL/1	Analysts/Programmers
U.K.	CICS, DL/1 COBOL or TL/1	Analysts/Programmers
London/H.C.	IMS DB, ADF COBOL	Snr. Programmer
London/H.C.	H66 FORTRAN or COBOL	Programmers
London/North	SYS 34 or 2903 RPG II	Programmers
London	NCR NEAT III	Programmers
London/W. GERMANY	OS MVS	JCL Writers
London/W. GERMANY	MFT/MVS Conversion	Systems Programmers
London/H.C.	SERIES 1 RPS COBOL	Programmers
London/H.C.	8100 DPPX COBOL	Programmers
London	PRIME 300, COBOL	Analysts/Programmers
W. GERMANY	PLM-PROCESS	Analysts/Programmers
W. GERMANY	CONTROL	Consultant
HOLLAND	DIGITAL TELECOMS	Software Engineers
	PDP11/VAX RTL/2	Analysts/Programmers

To register your interest phone JANET - 021-622 3040

### REAL TIME CONSULTANTS

Monaco House, Bristol Street  
Birmingham B5 7AS  
Telephone 021-622 6181 / 2 or 622 3040 (24 hrs)

## SHAPE TECHNICAL CENTRE THE HAGUE (HOLLAND)

SHAPE Technical Centre - a NATO Research  
Organisation - has a vacancy for a

## SENIOR SYSTEM PROGRAMMER

INITIAL SALARY DG.37,125  
NET PER ANNUM

for its Control Data Cyber 740 computer system. The successful candidate should have broad experience in data processing with at least three years in systems programming for a CDC Cyber/6000 computer system.

Good knowledge of programming in high-level languages and macro-assembler at the operating system level is required.

Starting salaries will depend on qualifications and experience and may be increased dependent on the family situation.

Applicants (NATO nationals only) should send a brief personal résumé to Personnel Officer, SHAPE Technical Centre, P.O. Box 174, 2501 CD The Hague, The Netherlands.

(4207)

## THE DEVELOPMENT OPPORTUNITY IN KENT FOR AMBITIOUS SYSTEMS PROGRAMMERS

Seismograph Service Ltd. are a major force in the seismic surveying field. Their operations are world wide and their computer utilisation ensures that they remain in the forefront of this dynamic area. As you will appreciate, it is an area of rapid and continuous growth and because of this, they need an ambitious systems programmer to join their professional team at BROMLEY.

You will have a science degree and at least 2 years' systems programming experience on DEC machines with a sound knowledge of ASSEMBLER. Preferably, you will have VAX operating systems experience and a wish to develop that experience on 11/780 equipment. You will be used to generating, maintaining and tuning systems and will be willing to give software support to the engineers on the ARRAY PROCESSOR.

You will want a career in the industry of the future and the following benefits:

- ★ A salary to £10,000
- ★ Subsidised canteen
- ★ Very attractive surroundings
- ★ Brand new offices
- ★ A superb training
- ★ A well-defined career path

Interested, then contact:

TUNBRIDGE WELLS 35712/3 (0892) (24-HOUR SERVICE)

(4142)



COMPUTANT  
LIMITED

RECRUITMENT AGENCY

14 MOUNT PLEASANT TUNBRIDGE WELLS KENT  
TELEPHONE TUNBRIDGE WELLS 35712/3/4

## IMS Systems Programmer

Amsterdam - 1 year £19,000+p.a.

**Initial posting**  
We are seeking a systems programmer with one or more years IMS experience. The initial assignment is to spend one year working as a member of a 3-man team in the Netherlands. The other team members consist of a senior systems programmer and a trainee, and the specific duties to be performed include generating and maintaining 1.1.6; planning for and implementing 1.2; providing advice and support to application development teams; and assisting in the evaluation of new DB/DC facilities and techniques. Our client's data centre runs MVS/SE and has a heavy IMS transaction load, with links to internal and external networks.

Inc. benefits

## IMS DB Support

Netherlands - 9 months+ £19,000+p.a.

**Initial posting**  
We are seeking an IMS specialist with a good understanding of IMS database design and familiarity with IMS utilities plus the technical aspects of DBA work. The initial assignment is to work for at least 9 months in the Netherlands, assisting in the implementation of IMS on a VME/386 architecture. The specific duties to be performed include generating and maintaining 1.1.6; planning for and implementing 1.2; providing advice and support to application development teams; and assisting in the evaluation of new DB/DC facilities and techniques. Our client's data centre runs MVS/SE and has a heavy IMS transaction load, with links to internal and external networks.

Inc. benefits

CBS is a leading Anglo-Saxon consultancy specialising in providing Systems Programming, Database and Telecommunications support to European IBM users. The majority of our staff are employed by CBS AG, Zurich, but we are also prepared to offer long-term contracts with independent consultants. For further details of these positions, please telephone or write to Jim Shaw at our UK Office, Bristol, during business hours on 0800 246466.

**The IBM System  
Software Specialists**

## PUT YOUR FUTURE IN THE LAP OF THE GODS!

ZEUS-HERMES RECRUITMENT LTD., provides a specialist recruitment service, finding suitable appointments for Data Processing Professionals for either permanent or contract positions.

Complete and return the coupon below, and...

-Don't just trust to luck!

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Home Tel: \_\_\_\_\_ Work Tel: \_\_\_\_\_  
Present salary: \_\_\_\_\_ Salary sought: \_\_\_\_\_  
Present position: \_\_\_\_\_  
Position sought: \_\_\_\_\_  
Years in DP: \_\_\_\_\_  
Main Machine(s): \_\_\_\_\_ Main Language(s): \_\_\_\_\_



ZEUS-HERMES RECRUITMENT  
TELEPHONE: 01-388 6011 (24 HOUR SERVICE) OR WRITE  
(NO STAMP REQUIRED) ZEUS-HERMES RECRUITMENT LTD  
FREEPOST 20, LONDON W1E 4YZ

DEPARTMENT OF FINANCE

## COMPUTER SHIFT LEADER

Grade T3/4  
Salary £5,178-£6,537 plus 14% shift allowance  
The council currently operates an I.C.L. 1902T computer running under George 2+ with several on-line applications. A Honeywell L64/DPS 2 is due for delivery in 1981 as a replacement for the 1902T.  
The successful applicant will be expected to play a substantial role in the transfer of work from the present equipment to Honeywell installation and a knowledge of the G.C.O.S. operating system is desirable.  
Applicants must have at least two years' operating experience and be capable of accepting high levels of responsibility during the alternating shifts.  
Application forms available from the Chief Personnel Officer, Civic Centre, Millgate, Wigan, Tel. Wigan 44981, ext. 43.  
Closing date: January 23, 1981.

(3971)

Metropolitan  
Borough of

WIGAN

POLYTECHNIC OF CENTRAL LONDON  
SCHOOL OF ENGINEERING AND SCIENCE  
The PCL has established itself as one of the leading institutions in computer education. The first year enrolments in Computing courses from HND to HNC Courses are over 280 for the 1980/81 session. In addition there is a vigorous research program and active industrial collaboration. The Short Course programme attracts well in excess of 1,000 people a year on a widely based series of courses.  
**PRINCIPAL LECTURER IN COMMERCIAL COMPUTING**  
SALARY: £11,800-£14,071 (BAU) - £14,000 inclusive of London Allowance.  
Currently there exists a vacancy for a Principal Lecturer in Commercial Computing. The work will relate to the post would principally be that of leading the commercially oriented courses, with lecturing, research and consultancy as appropriate. The areas of interest include:  
i) professional standards of programming for commercial applications in COBOL, PASCAL, etc.  
ii) systems technology for huge filing systems  
iii) micro computers applied to business  
iv) word processing.  
**LECTURER / SENIOR LECTURER IN DIGITAL SYSTEMS AND MICROCOMPUTER ENGINEERING**  
SALARY: £8,771-£10,461 (BAU) - £10,400 inclusive of London Allowance.  
Applications are invited from candidates with either a hardware or software background for a lectureship in Digital Electronic Systems to support the graduate and postgraduate computer technology teaching in the School of Engineering and Science. Research/consultancy and short course generation are all actively encouraged as constituent elements of the position. The successful applicant will be expected to make initiatives in at least one of these activities.  
For full details and application forms from the Establishment Office, The Polytechnic of Central London, 205 Regent Street, London, W1R 6LJ. Closing date January 30th, 1981. Phone 01-580 2020 Ext. 212.

(4048)

FOR

CLASSIFIED

ADVERTISING

USE

DIRECT LINE

01-661 0121

## SAUDI ARABIA

We are seeking the following staff for bachelor status contracts:-

**Analyst Programmers**  
With approximately 3 years experience of IBM computers Cobol and JCL. Also be able to design programs, program maintenance and develop systems feasibility. (Ref. 6E)

**Operation Restart and Recovery Specialist**

3 years experience in the restart of on-site production job failures and the operation of a master terminal for online telecommunications facility. (Ref. 5E)

For application form ring Gordon Newton on 01-222 1677, or write to Lonsdowne (Middle East) Ltd., c/o Lonsdowne House, 36 Great Smith Street, Westminster, London SW1P 3BU.

## GUIDE TO RECRUITMENT CONSULTANTS IN THE U.K

LONDON & H. COUNTIES (LH), MIDLANDS (M), NORTH (N), SCOTLAND (S), OVERSEAS (O)

NORTHERN IRELAND

ALL COMPUTER  
STAFF NEEDS

ESOC Management Consultants Ltd.  
Professional, reliable, confidential  
Write to: 77 Botolph Claydon, Suffolk  
IP19 1JL, or phone 0473 52221  
48288

ALL COMPUTER  
STAFF NEEDS

Ivor Norton Management  
Services Ltd.

Recruitment Consulting Division

82 Shaftesbury Avenue, London W1V 7DE  
01-734 8982, 124 hour answering service

P.O. Box 93, Copthall Tower House,  
Havering UO1 1TS, Tel: Havering 99888

ALL COMPUTER  
STAFF NEEDS

2800 MANAGEMENT  
CONSULTANTS LIMITED

37 Bedford Avenue,  
Belfast BT7 1JL

Tel: Belfast 45083

Professional, reliable, confidential

COMPUTER INDUSTRY SPECIALISTS

INSIGHT MARKETING & PERSONNEL CONSULTANTS LTD.  
AUSTIN HOUSE, CHARLOTTE STREET, MANCHESTER, TEL: 061-236 7028

Computer Professional Recruitment  
Consultancy  
"COMPUTER PROFESSIONALS - MAKE  
SURE WE HAVE YOU IN MIND"

John Giddings  
Recruitment

TEMPORARY AND PERMANENT  
COMPUTER PROFESSIONALS

FOR THE BEST  
PERMANENT AND  
CONTRACT JOBS IN THE  
NORTH OF ENGLAND

W.A. Kelly  
Recruitment  
111-113, The Quadrant,  
Bristol, Avon, BS1 1JH  
01-251 8114

FOR FURTHER DETAILS OF THIS WEEKLY  
FEATURE CONTACT  
OWEN KELLY, 061-872 8861